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WILDLIFE REVIEW

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Except as indicated, abstracts are by Kenneth J. Chiavetta, editor,
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NATURAL RESOURCES & CLIMATE

Barnes, William B. INDIANA'S NEW PROGRAM FOR NATURE PRESERVES. 6-page reprint (illus.) from *Outdoor Ind.* 1969. *WR 144: 2*

The 1967 General Assembly created a Division of Nature Preserves within the Indiana Department of Natural Resources. It provides for the acquisition, control, use management and protection of a state system of nature preserves. This paper describes how the system works, the types of areas involved, and the purposes it will serve.--Courtesy/ W. B. Barnes.

Pitelka, Frank A. ECOLOGICAL STUDIES ON THE ALASKAN ARCTIC SLOPE. *Arctic* 22(3): 333-340. Sept. 1969. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 2*

SOILS

Christman, Richard L., and others. SOIL SURVEY OF STARK COUNTY, OHIO. *U.S. Dep. Agr. Soil Conserv. Serv. Soil Surv.* i + 157 p., 13 figs. + single-fold maps based on aerial photos and bound in. Oct. 1971. For sale by Supt. Documents, GPO, Washington, D.C. *WR 144: 2*

Griggs, John E., and others. SOIL SURVEY OF ADDISON COUNTY, VERMONT. *U.S. Dep. Agr. Soil Conserv. Serv. Soil Surv.* 59 p., 5 figs. + single-fold maps based on aerial photos and bound in. Oct. 1971. For sale by Supt. Documents, GPO, Washington, D.C. *WR 144: 2*

Hallbick, D. C., and others. SOIL SURVEY OF DOUGLAS COUNTY, ILLINOIS. *U.S. Dep. Agr. Soil Conserv. Serv. Soil Surv.* i + 81 p., 17 figs. + single-fold maps based on aerial photos and bound in. Aug. 1971. For sale by Supt. Documents, GPO, Washington, D.C. *WR 144: 2*

Jaco, Hubert B., and Larry M. Lockwood. SOIL SURVEY OF EL PASO COUNTY, TEXAS. *U.S. Dep. Agr. Soil Conserv. Serv. Soil Surv.* 59 p., 25 figs. + single-fold maps based on aerial photos and bound in. Nov. 1971. For sale by Supt. Documents, GPO, Washington, D.C. *WR 144: 2*

Larson, Richard L., and others. SOIL SURVEY OF MACOMB COUNTY, MICHIGAN. *U.S. Dep. Agr. Soil Conserv. Serv. Soil Surv.* i + 110 p., 17 figs. + single-fold maps based on aerial photos and bound in. Sept. 1971. For sale by Supt. Documents, GPO, Washington, D.C. *WR 144: 2*

Lessig, Heber D., and others. SOIL SURVEY OF MAHONING COUNTY, OHIO. *U.S. Dep. Agr. Soil Conserv. Serv. Soil Surv.* 124 p., 10 figs. + single-fold maps based on aerial photos and bound in. Oct. 1971. For sale by Supt. Documents, GPO, Washington, D.C. *WR 144: 2*

SOILS--Continued

Markley, Marco L., and Richard G. Hutchins. SOIL SURVEY OF BURLINGTON COUNTY, NEW JERSEY. *U.S. Dep. Agr. Soil Conserv. Serv. Soil Surv.* 120 p., 24 figs. + single-fold maps based on aerial photos and bound in. Oct. 1971. For sale by Supt. Documents, GPO, Washington, D.C. *WR 144: 3*

Matthews, Earle D., and others. SOIL SURVEY OF CALVERT COUNTY, MARYLAND. *U.S. Dep. Agr. Soil Conserv. Serv. Soil Surv.* i + 76 p., 7 figs. + single-fold maps based on aerial photos and bound in. July 1971. For sale by Supt. Documents, GPO, Washington, D.C. *WR 144: 3*

McCollum, Samuel H., and Robert F. Pendleton. SOIL SURVEY OF OKEECHOBEE COUNTY, FLORIDA. *U.S. Dep. Agr. Soil Conserv. Serv. Soil Surv.* 62 p., 20 figs. + single-fold maps based on aerial photos and bound in. Sept. 1971. For sale by Supt. Documents, GPO, Washington, D.C. *WR 144: 3*

Murphy, Dean A., and Wayne R. Porath. FOREST SOILS AND GAME NUTRITION. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 18-25, 1 fig. 1969 [1970]. *WR 144: 3*
[Mo. Dep. Conserv., Columbia.] "In summary, poor soils have poor potential for wildlife production. The best soils have the best potential but land-use prevents wildlife from reaching this potential."

Nixon, E. S., and L. K. Halls. RESPONSE OF PARTRIDGEPEA TO SOIL FACTORS. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 26-31. 1969 [1970]. *WR 144: 3*
[Stephen F. Austin State Univ., Nacogdoches, Tex.]

GENERAL CONSERVATION

Das, S. M. NATURE CONSERVATION WITH SPECIAL REFERENCE TO WILD LIFE IN KASHMIR. *Indian Sci. Congr. Ass., Proc. Session* 57(4): 110-112. 1970. [From J. Mammal. 52(4, suppl.), 1971. Abstract only.] *WR 144: 3*

Hoekstra, H. H. EUROPEAN CONSERVATION YEAR 1970. *Trans. IX Int. Congr. Game Biol.* p. 885-887. 1970. In English with Russian summ. *WR 144: 3*
[Council of Europe, Strasbourg, France.]

Leng-Ee, Pong. WILD LIFE CONSERVATION IN THAILAND. *IUCN Publ., New Ser.* (Morges) 19: 67-71. 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 3*

WILDLIFE--BIOTAS, ECOLOGY, NATURAL HISTORY

Alcala, A. C., and Pedro Alviola III. NOTES ON THE BIRDS AND MAMMALS OF BORACAY, CALUYA, CARABAO, SEMIRARA AND SIBAY ISLANDS, PHILIPPINES. *Silliman J.* 17(4): 444-454. 1970. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 3*

Day, Beth. LIFE ON A LOST CONTINENT / A NATURAL HISTORY OF NEW ZEALAND. *Doubleday & Co., Inc.* (Garden City, N.Y.). 128 p., illus., 5.5 x 8.5 in. 1971. Price $3.95. *WR 144: 3*
This historical survey provides general information about the exotic wildlife and plants of New Zealand. Several general categories included are: populating of the island with land animals by man, the extinction and decline of several native birds, and the current conservation and preservation practices for both plants and wildlife. Though aimed at young readers, it is an interesting and informative natural history for adults.

Feriancova-Masarova, Zora, and Oskar Ferianc. PREHLAD VYSKUMU FAUNY SLOVENSKYCH KARPAT R. 1948-1970. [SURVEY OF THE RESEARCH WORK ON THE SLOVAK CARPATHIAN FAUNA FROM 1948 TO 1970 (REVIEW).] *Biologia* (Bratislava) 26(2): 165-176. 1971. [From Biol. Abstr. 52(20), 1971.] *WR 144: 3*
[Prirodoved. Fak., Univ. Komenskeho, Bratislava, Czechoslovakia.]

Fuhn, I. E. ASPECTE ALE SITUATIEI ACTUALE A FAUNEI DIN REZERVATIA PADUREA HAGIENI (JUD. CONSTANTA). [ASPECTS ON THE CURRENT SITUATION OF THE FAUNA OF THE HAGIENI FOREST NATURE RESERVE (CONSTANTZA DEPARTMENT, ROMANIA).] *Ocrotirea Natur.* 14(1): 65-68, illus. 1970. [From Biol. Abstr. 52(20), 1971. In Romanian with French summ.] *WR 144: 4*
[Inst. Biol. "Traian Savulescu", Bucharest, Romania.]

Karaseva, E. V., Y. M. Telitsyn, V. A. Lapshov, and Y. V. Okhotskii. [STUDY OF THE LAND VERTEBRATES OF CENTRAL YAMAL.] *Byull. Mosk. Obshchest. Ispyt. Prir. Otd. Biol.* 76(2): 22-32, illus. 1971. [From Biol. Abstr. 52(23), 1971. In Russian with English summ.] *WR 144: 4*

Papadopol, Aurel. CONTRIBUTII LA CUNOASTEREA AVIFAUNEI DIN SUDUL DOBROGII. [CONTRIBUTIONS TO THE KNOWLEDGE ABOUT THE FAUNA OF SOUTHERN DOBROUDJA (ROMANIA).] *Ocrotirea Natur.* 14(1): 49-60, illus. 1970. [From Biol. Abstr. 52(20), 1971. In Romanian with French summ.] *WR 144: 4*
New information on the fauna of certain areas of southern Dobroudja.

Rabor, D. S., A. C. Alcala, and R. B. Gonzales. A LIST OF THE LAND VERTEBRATES OF NEGROS ISLAND, PHILIPPINES. *Silliman J.* 17(3): 297-316. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 4*

Roonwal, M. L. FAUNA OF RAJASTHAN, INDIA: I: GENERAL INTRODUCTION, WITH A LIST OF COLLECTING LOCALITIES AND A BIBLIOGRAPHY OF RAJASTHAN ZOOLOGY. *Rec. Zool. Surv. India* 61(3/4): 291-376, illus. 1963 (1969). [From Biol. Abstr. 52 (23), 1971.] *WR 144: 4*
[Zool. Surv. India, Calcutta, India.]

Snow, D. W. THE EASTERN INDIAN OCEAN ISLANDS: A SUMMARY OF THEIR GEOGRAPHY, FAUNA, AND FLORA. *IUCN Publ., New Ser.* (Morges) 17: 212-223. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 4*

Voisin, Jean-Francois. SOME NOTES ABOUT BIRDS AND MAMMALS IN SVALBARD, SUMMER 1969. *Arbok* (Oslo) 1969: 107-115. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 4*

Yocom, Charles, and Vinson Brown. WILDLIFE AND PLANTS OF THE CASCADES. *Naturegraph Publishers* (Healdsburg, Calif.). 293 p., illus. 1971. Price $3.95 paper, $5.95 cloth. *WR 144: 4*
Eighth of a series of the wildlife regions of America. Contains basic information to help in the identification of the mammals, birds, reptiles, amphibians, common plants, and fish of the region.

Yocom, Charles, William Weber, Richard Beidleman, and Donald Malick. WILDLIFE AND PLANTS OF THE SOUTHERN ROCKY MOUNTAINS. Revised edition. *Naturegraph Publishers* (Healdsburg, Calif.). 132 p., illus. 1969. Price $2.95 paper, $4.95 cloth. *WR 144: 4*
A guide-book to the common wild animals and plants of nearly all the high mountain areas of Utah, Colorado, New Mexico, and Arizona. The plants are grouped by vegetational communities or habitats.

WILDLIFE--NATURAL AREAS & REFUGES

Houston, Douglas B. ECOSYSTEMS OF NATIONAL PARKS. *Science* (Washington) 172 (3984): 648-651. 1971. [From Biol. Abstr. 52(20), 1971.] *WR 144: 4*
[Yellowstone Nat. Park, Wyo.]

Wallis, Orthello L. ESTABLISHING UNDERWATER PARKS WORLDWIDE. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 97-117. 1971. *WR 144: 4*
[Nat. Park Serv., Washington, D.C.] Topics covered are: past marine conservation, threats to marine resources, modern marine technology, marine revolution,

names applied to marine areas, purposes of underwater parks, concept of underwater preservation, underwater parks urged, international underwater preserves, oceanic islands, interested organizations, development of underwater parks, and a worldwide review on a country to country basis of development of underwater parks and preserves.

WILDLIFE--NATURE PROTECTION & RARE & EXTINCT SPECIES

Bannikov, A. G. PROTECTION OF WILD ANIMALS IN THE USSR IN AND OUT OF USE. *IUCN Publ., New Ser.* (Morges) 17: 116-120. 1970. [From J. Mammal. 52(4, suppl.), 1971. In English with French summ.] *WR 144: 5*

George, William G. VANISHED AND ENDANGERED BIRDS OF ILLINOIS: A NEW 'BLACK LIST' AND 'RED LIST'. *Audubon Bull.* no. 158. p. 2-11. June 1971. *WR 144: 5*
[Southern Ill. Univ., Carbondale.]

Goodwin, Harry A., and Eley P. Denson. STATUS OF ENDANGERED SPECIES PROGRAM. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 331-341. 1971. *WR 144: 5*
[Bur. Sport Fisheries & Wildl., Washington, D.C.] Aspects of the program discussed are: the Endangered Species Conservation Act of 1969, legal authority, goals of the program, research, captive propagation and reintroductions, habitat preservation, protection and management, and the benefits of the program.

Heintzelman, Donald S., editor. RARE OR ENDANGERED FISH AND WILDLIFE OF NEW JERSEY. *Sci. Notes, N.J. State Mus.* 4: 1-23. 30 Aug. 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 5*

Kirk, Gustav H. CONTRIBUIÇÃO PARA A DEFESA DOS MAMIFEROS EUROPEUS MEDIANTE NORMAS LEGISLATIVAS. [CONTRIBUTION TO THE DEFENSE OF EUROPEAN MAMMALS BY LEGISLATIVE STANDARDS.] *Mem. Estud. Mus. Zool. Univ. Coimbra* 313. p. 1-8. 1970. [From Biol. Abstr. 52(20), 1971. In Portuguese.] *WR 144: 5*
Suggestion to extend protection to bats and several insect and flesh-eating animals.

Novakowski, N. S. ENDANGERED WILDLIFE--MAMMALS. *Wildl. Rev.* (Victoria, B.C.) 5(10): 11-13. Summer 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 5*

Schaller, George B., and Noel M. Simon. THE ENDANGERED LARGE MAMMALS OF ASIA. *IUCN Publ., New Ser.* (Morges) 18: 11-23. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 5*

Treus, V. D. [PROTECTION AND BREEDING OF GAME AND RARE ANIMALS IN ASKANIA-NOVA.] *Trans. IX Int. Congr. Game Biol.* p. 155-157. 1970. In Russian with English summ. *WR 144: 5*

Tsevegmyd, D. [THE RAREST ANIMALS OF MONGOLIA AND THEIR PRESENT STATUS.] *Trans. IX Int. Congr. Game Biol.* p. 872-874. 1970. In Russian with English summ. *WR 144: 5*
"Equus przewalskii, Camelus bactrianus, Ursus pruinosus, Equus hemionus and *Saiga tatarica."*

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Ficken, Robert W., Paul E. Matthias, and Robert Horwich. EYE MARKS IN VERTEBRATES: AIDS TO VISION. *Science* (Washington) 173(4000): 936-939, 2 figs. 3 Sept. 1971. *WR 144: 5*
[Univ. Wis., Milwaukee.] Abstract: Lines leading forward from the eye may function as aiming sights in many small vertebrates. The chief evidence is the correlation of distribution and positions of eye-lines in various vertebrate groups with predatory feeding habits. Dark patches around the eye may serve to reduce glare in species in bright environments. Facial patterns often have multiple functions.

Halder, Ulrich, and Rudolf Schenkel. PUTZSYMBIOSE ZWISCHEN BANTENG *(BOS JAVANICUS)* UND SUNDAKRAEHE *(CORVUS ENCA)*. [MUTUALISM BETWEEN THE BANTENG *(BOS JAVANICUS)* AND THE SUNDA CROW *(CORVUS ENCA)*.] *Rev. Suisse Zool.* 77(4): 935-938. 1970. [From Biol. Abstr. 52(19), 1971. In German.] *WR 144: 6*
[Univ. Basel, Basel, Switzerland.]

Kurz, Martha. [CONNECTIONS BETWEEN BODYFORM AND SUNBATHING BEHAVIOUR, SHOWN ON EXAMPLES FROM DIFFERENT CLASSES OF VERTEBRATES.] *Forma Functio* 2(4): 352-360. 1970. [From J. Mammal. 52(3, suppl.), 1971. In German with French and English summ.] *WR 144: 6*

Moynihan, M. SUCCESSES AND FAILURES OF TROPICAL MAMMALS AND BIRDS. *Amer. Natur.* 105(944): 371-383. 1971. [From Biol. Abstr. 52(23), 1971.] *WR 144: 6*
[Smithsonian Trop. Res. Inst., Box 2072, Balboa, Canal Zone.] Tropical species often are more successful in invading the temperate zones than temperate species are in invading the tropics.

WILDLIFE--POLLUTION

Barber, Thomas A., and Julius G. Nagy. EFFECTS OF PESTICIDES ON MULE DEER RUMEN BACTERIA. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 153-162. 1971. *WR 144: 6*
[Colo. State Univ., Fort Collins.] Chronic-type exposure to a persistent, inhibitor pesticide is a potential hazard to the health of the mule deer, *Odocoileus hemionus*.

Barrier, Martin J., John K. Reed, and Lloyd G. Webb. PESTICIDE RESIDUES IN SELECTED TISSUES OF THE WHITE-TAILED DEER, *ODOCOILEUS VIRGINIANUS*, IN CALHOUN COUNTY, SOUTH CAROLINA. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comm.* p. 31-45, 5 figs. 1970 [1971]. *WR 144: 6*
[Clemson Univ., Clemson, S.C.] Only DDT and metabolites were detected. Two residue peaks were evident, one in early spring, and another corresponding to the spray season in late summer. The highest mean residues (1.76 ppm) were found in fat, followed by brain, feces, rumen contents, liver, loin muscle, kidney, and rump muscle in that order. The highest total DDT residue (6.67 ppm) recovered in the fat of a deer collected at the height of the spray season did not exceed the maximum tolerance limit (7.0 ppm) presently established for beef by the FDA. The *p,p'* DDT isomer was the most common residue detected in all tissues. Substantial *p,p'* DDD residues were recovered in the liver, feces, and rumen contents, but low levels of DDE and *o,p'* DDT were found in all tissues. There was no evidence suggesting that bioaccumulation of DDT occurred from one year to the next. Higher residues were found with increasing age and weight of the deer, but no difference in residues was detected between males and females.--From abstr.

Bitman, Joel, Helene C. Cecil, and George F. Fries. NONCONVERSION OF o,p'-DDT TO p,p'-DDT IN RATS, SHEEP, CHICKENS, AND QUAIL. *Science* (Washington) 174(4004): 64-66. 1 Oct. 1971. *WR 144: 6*
[Agr. Res. Serv., Beltsville, Md.] Abstract: The finding of appreciable quantities of *p,p'*-DDT after feeding *o,p'*-DDT to rats led to the proposal of a theory that an isomeric metabolic conversion occurs. The presence of *p,p'*-DDT as an impurity in supposedly pure samples of *o,p'*-DDT is the correct explanation for the appearance of *p,p'*-DDT. Purified *o,p'*-DDT and ^{14}C-labeled *o,p'*-DDT yielded no data to support the idea that *o,p'*-DDT is converted to the *p,p'*-DDT isomer.

Cade, Tom J., Jeffrey L. Lincer, Clayton M. White, David G. Roseneau, and L. G. Swarts. DDE RESIDUES AND EGGSHELL CHANGES IN ALASKAN FALCONS AND HAWKS. *Science* (Washington) 172(3986): 955-957, 1 fig. 28 May 1971. *WR 144: 6*
[Cornell Univ., Ithaca, N.Y.] Abstract: Eggshell thickness after exposure to DDT was reduced by 21.7% in Alaskan tundra peregrines, by 16.8% in taiga

peregrines, by 7.5% in Aleutian peregrines, by 3.3% in rough-legged hawks, and not at all in gyrfalcons. Tundra peregrine eggs contain an average of 889 parts of DDE per million (lipid basis); taiga peregrine eggs contain 673 parts per million; Aleutian peregrine eggs contain 167 parts per million; rough-legged hawk eggs contain 22.5 parts per million; and gyrfalcon eggs contain 3.88 parts per million. These changes in eggshell thickness and the pesticide residues reflect different degrees of exposure to contamination. There is a highly significant negative correlation between shell thickness and DDE content in peregrine eggs. Tundra and taiga peregrines have fledged progressively fewer young each year since 1966.

Dahlgren, Robert B., Yvonne A. Greichus, and Raymond L. Linder. STORAGE AND EXCRETION OF POLYCHLORINATED BIPHENYLS IN THE PHEASANT. *J. Wildl. Mgmt.* 35(4): 823-828. Oct. 1971. *WR 144: 7*

[S. Dak. Coop. Wildl. Res. Unit, Brookings.] Abstract: The average recovery of polychlorinated biphenyls (PCB) from tissue of pheasants *(Phasianus colchicus)* injected with 2, 20, and 200 ppm (based on live weight) Aroclor 1254 was 95%, with a standard deviation of ±9% as determined by analysis with gas chromatography. Of a single 50-mg capsule given to each of four adult hens in a state of low egg production, 94% was absorbed. Of the PCB absorbed, 4.0 mg was excreted in the feces and 4.2 mg was excreted in the eggs over the next 28 days. Levels of PCB were highest in liver, followed by brain and muscle, when checked at 24 hours after a capsule was given. This pattern of storage was maintained throughout the 28-day period. Egg production can be an important means of excretion of PCB. In hens given a single capsule, the largest amount, 1.5 mg PCB per egg, was excreted in eggs laid the second week. In four hens laying a combined total of 16 eggs, 40.5 mg of a single dose of 50 mg PCB given to each hen, were found by whole-body analysis after 28 days.

DeLeonardis, Salvatore. INDUSTRIALIZATION OF THE NORTH AND ITS EFFECTS ON WILDLIFE RESOURCES. *Trans. Fed.-Provincial Wildl. Conf.* 34: 46-49. 15 July 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 7*

Dustman, E. H., L. F. Stickel, L. J. Blus, W. L. Reichel, and S. N. Wiemeyer. THE OCCURRENCE AND SIGNIFICANCE OF POLYCHLORINATED BIPHENYLS IN THE ENVIRONMENT. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 119-133, 1 fig. 1971. *WR 144: 7*

[Patuxent Wildl. Res. Center, Laurel, Md.] Polychlorinated biphenyls (PCB's), a group of chlorine-bearing compounds of industrial origin, have permeated the natural environment throughout the world. Here the chemistry, use and source, and occurrence of PCB's is reviewed. Effects on food chains and toxicity to birds, insects, and fish and aquatic invertebrates including physiology are reported.

Fimreite, Norvald. EFFECTS OF DIETARY METHYLMERCURY ON RING-NECKED PHEASANTS WITH SPECIAL REFERENCE TO REPRODUCTION. *Canadian Wildl. Serv., Dep. Environ. Occas. Pap.* no. 9. 39 p., 8 figs. 1971. [In English with French abstr.] *WR 144: 7*

[Univ. Western Ontario, London, Ontario, Canada.] The effects of methylmercury-treated grain (methylmercury dicyandiamide) on penned pheasants *(Phasianus colchicus)* were studied in a two-way factorial experiment, the factors involved being mercury levels (100, 50 and 25% treated grain in the grain ration) and the length of the experimental feeding period (2, 4 and 12 weeks). An additional three groups served as controls. Strong adverse effects on reproduction were found: the most important indication was reduced hatchability, followed by a reduced egg production and a large number of shell-less eggs. Chick survival was comparatively less affected. Egg weight was reduced significantly in most of the experimental groups, especially during the last weeks of the experiment, and the highest mercury levels produced a large number of eggs with abnormal color.--From abstr.

Fimreite, N., W. N. Holsworth, J. A. Keith, P. A. Pearce, and I. M. Gruchy. MERCURY IN FISH AND FISH-EATING BIRDS NEAR SITES OF INDUSTRIAL CONTAMINATION IN CANADA. *Canadian Field-Natur.* 85(3): 211-220, 2 figs. July-Sept. 1971. In English with French summ. *WR 144: 8*

[Univ. Western Ontario, London, Ontario, Canada.] Concentrations of mercury were determined in fish muscle, livers and eggs of fish-eating birds, and bivalve molluscs. Most of the material was collected near sites of industrial contamination: a mercury mine, chlor-alkali plants and pulp mills known to use or have used mercury. Most sites showed substantial mercury contamination, especially downstream from the above sources. A positive correlation was found between the trophic feeding level and mercury concentration in both fish and fish-eating birds. The mercury concentrations are discussed in terms of published data on hazard to human health and to reproduction in fish-eating birds.--From abstr.

Fowler, J. F., L. D. Newsom, J. B. Graves, F. L. Bonner, and P. E. Schilling. EFFECT OF DIELDRIN ON EGG HATCHABILITY, CHICK SURVIVAL AND EGGSHELL THICKNESS IN PURPLE AND COMMON GALLINULES. *Bull. Environ. Contam. & Toxicol.* 6(6): 495-501. Nov.-Dec. 1971. *WR 144: 8*

[La. State Univ., Baton Rouge.] "Considering the data obtained during this study, the reproductive potential of purple and common gallinules associated with aldrin-treated rice fields does not appear to be seriously threatened by the presence of rather high levels of dieldrin in their eggs. However, this does not mean that there may not be an adverse effect on reproduction from these residues. Variation was great enough in this study that rather small effects could not be measured with accuracy."

Fowler, J. S. L. CHLORINATED HYDROCARBON TOXICITY IN THE FOWL AND DUCK. *J. Comp. Path.* 80: 465-471. 1971. *WR 144: 8*

[Royal (Dick) School Vet. Studies, Univ. Edinburgh, Edinburgh, Scotland.] Metabolites of carbon tetrachloride were not detected in cockerels or ducks. In contrast hexachloroethane was metabolized to pentachloroethane and tetrachloroethylene as occurs in mammals.--From summ.

Gibb, J. A. HUMAN PRESSURES ON THE NATURAL ENVIRONMENT. *New Zealand Official Yearb.* 1970: 1115-1120. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 8*

Hill, Edward P. III. OBSERVATIONS OF IMPORTED FIRE ANT PREDATION ON NESTLING COTTONTAILS. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 171-182. 1969 [1970]. *WR 144: 8*

[Ala. Coop. Wildl. Res. Unit, Auburn.] Abstract: During a five year study of cottontail reproduction in Alabama, frequent observations were made of activities and mortality of nestling cottontail rabbits in five 50' x 50' pens, in six 200' x 200' pens, and in five large enclosures ranging from 6 to 40 acres in size. During this study 371 cottontail nests were found in which 231 litters were born. Evidence, some of which is circumstantial, indicates that 68 whole litters and parts of two other litters were destroyed by fire ants. From these observations it appears that significant fire ant disturbances to cottontail nesting can be expected in pens and enclosures where fire ant populations are of medium to high density. This is not meant to imply that fire ant predation would seriously alter cottontail populations in an unrestricted natural environment containing fire ant populations.

Hill, Elwood F. TOXICITY OF SELECTED MOSQUITO LARVICIDES TO SOME COMMON AVIAN SPECIES. *J. Wildl. Mgmt.* 35(4): 757-762. Oct. 1971. *WR 144: 8*

[Patuxent Wildl. Res. Center, Laurel, Md.]

Hines, Tommy, and Ralph W. Dimmick. THE ACCEPTANCE BY BOBWHITE QUAIL OF RODENT BAITS DYED AND TREATED WITH ZINC PHOSPHIDE. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 201-205. 1970 [1971]. *WR 144: 8*

[Tenn. Game & Fish Comm., Rutledge.] "Under the experimental conditions described whole oat groats dyed black were least consumed by quail, and appear to be the most satisfactory bait vehicle for the application of zinc phosphide.

Zinc phosphide applied to the oat kernels also served as a deterrent to feeding. Only two deaths occurred in nearly 500 bird-days exposure to dense concentration of oat groats treated with 1.5% by weight of zinc phosphide. We conclude from these data, that zinc phosphide treated oat groats pose relatively low hazard to bobwhite quail if distributed at recommended rates during a period of reasonable food abundance for quail."

Ikeda, Shinjiro. [THE TOXIC EFFECT OF ZINC PHOSPHIDE (Zn_3P_2) ON PENNED QUAIL, *COTURNIX COTURNIX JAPONICA.*] *Bull. Govt. Forest Exp. Sta.* (Tokyo) no. 238. p. 141-148. July 1971. In Japanese with English summ. *WR 144: 9*
[Min. Agr. & Forestry, Tokyo, Japan.]

Johnson, Lauren G., Robert L. Morris, and Richard Bishop. PESTICIDE AND MERCURY LEVELS IN MIGRATING DUCK POPULATIONS. *Bull. Environ. Contam. & Toxicol.* 6(6): 513-516. Nov.-Dec. 1971. *WR 144: 9*
[Univ. Iowa, Iowa City.] Results of analyses of breast, liver and fat tissues of 6 spp. of ducks. Only two samples were significantly above 0.5 ppm mercury concentration. These are the liver samples of the lesser scaup and the shoveller ducks being 1.3 ppm and 1.2 ppm respectively. Because of the limited amount of data it would be difficult to say if these are elevated because of species differences, different summer feeding areas or simply random variations in the samples. Except for the two values of mercury in the liver, the samples did not show evidence of significant contamination by pesticides and mercury when evaluated against FDA tolerances for fish.

Laubscher, J. A., G. R. Dutt, and C. C. Roan. CHLORINATED INSECTICIDE RESIDUES IN WILDLIFE AND SOIL AS A FUNCTION OF DISTANCE FROM APPLICATION. *Pesticides Monitoring J.* 5(3): 251-258, 4 figs. Dec. 1971. *WR 144: 9*
[Woodson-Tenent Labs., 345 Adams, P.O. Box 2135, Memphis, Tenn.] Abstract: DDT and its metabolites were studied in a diverse ecosystem downwind from an area of insecticide application. Results showed that the distance from agriculture determines the relative quantities of residues present in animals, birds, and soils. Residues of DDT plus its metabolites were detected at levels from 6 to 929 ppb in White-footed mice and from 2.9 to 2770 ppb in various other animals. Samples of quail liver from the study area contained residues ranging from 500 to 2800 ppb, and soil residues ranged from 3.6 to 6700 ppb. Results also showed that DDT residue levels in biological specimens decline as the soil insecticide concentrations decline.

Ljunggren, Lars. MERCURY IN THE LIVER OF WOOD PIGEONS *COLUMBA P. PALUMBUS* L. IN 1964 AND 1967. *Ornis Scandinavica* 2(1): 13-15. 1971. [From Biol. Abstr. 52(23), 1971.] *WR 144: 9*
[Univ. Lund, Lund, Sweden.] From analyses of Hg in the liver of urban and rural wood pigeons shot in 1964 and 1967 in south-western Scania, Sweden, the following conclusions can be drawn. Firstly, the Hg concentration in the liver dropped sharply from 1964 to 1967. Secondly, an apparently higher Hg concentration was found in rural than in urban wood pigeons and, thirdly, there were considerably higher Hg concentrations in spring than in autumn.

Longcore, J. R., F. B. Samson, and T. W. Whittendale, Jr. DDE THINS EGGSHELLS AND LOWERS REPRODUCTIVE SUCCESS OF CAPTIVE BLACK DUCKS. *Bull. Environ. Contam. & Toxicol.* 6(6): 485-490. Nov.-Dec. 1971. *WR 144: 9*
[Patuxent Wildl. Res. Center, Laurel, Md.] Summary: Eggs of captive black ducks fed diets containing DDE at 10 and 30 ppm (dry weight) experienced significant shell thinning and an increase in shell cracking when compared to eggs of untreated black ducks. Eggshells from dosed ducks were: 18-24% thinner at the equator than shells from undosed ducks; 28-31% thinner at the cap; and 29-38% thinner at the apex. Shell cracking averaged 21% among eggs from the 30 ppm DDE dosage and 10% among eggs from the 10 ppm dosage. Only 2% of the eggs from untreated black ducks were cracked. Survival of ducklings from dosed parents in terms of "percentage of 21-day ducklings of embryonated eggs" was 40-76% lower than survival of ducklings from undosed parents. Average DDE residues (wet weight) in eggs from hens fed 10 and 30 ppm DDE were 46 ppm and 144 ppm, respectively.

McLane, M. Anne Ross, Lucille F. Stickel, and John D. Newsom. ORGANOCHLORINE PESTICIDE RESIDUES IN WOODCOCK, SOILS, AND EARTHWORMS IN LOUISIANA, 1965. *Pesticides Monitoring J.* 5(3): 248-250. Dec. 1971. *WR 144: 10*

[Patuxent Wildl. Res. Center, Laurel, Md.] Abstract: Woodcock *(Philohela minor)*, earthworms, and soil samples were collected from January-March 1965, from fields in southeastern Louisiana approximately 3 years after discontinuance of areal treatments with heptachlor in this region. Heptachlor epoxide residues in woodcock averaged 0.42 ppm (dry weight), conspicuously lower than in 1961 and 1962. Residues of DDE in woodcock averaged 3.62 ppm, higher than in birds taken in the same area in 1961-62. Earthworms and soils contained traces of several organochlorine pesticides.

Morris, Ralph D. BIOCIDES AND MAMMALS. *Blue Jay* 29(3): 136-140, 1 fig. Sept. 1971. *WR 144: 10*

[Brock Univ., St. Catharines, Ontario, Canada.] Some of the ways in which chlorinated hydrocarbon biocides directly or indirectly diarupt the behavior, reproduction and ecology of wild mammal populations.

Murray, William S. ECONOMICS AND PESTICIDES. *Proc. Entomol. Soc. Ontario* 100: 29-39. 1969 (1970). [From Biol. Abstr. 52(19), 1971.] *WR 144: 10*

[Fed. Comm. Pest Control, Washington, D.C.]

Neill, D. D., H. D. Muller, and J. V. Shutze. PESTICIDE EFFECTS ON THE FECUNDITY OF THE GRAY PARTRIDGE. *Bull. Environ. Contam. & Toxicol.* 6(6): 546-551. Nov.-Dec. 1971. *WR 144: 10*

[Colo. State Univ., Fort Collins.] "Although few of the individual factors investigated attained statistical levels of significance, progressive debility of physiological fitness, particularly progeny production, is strongly indicated in these responses to pesticide ingestion at sublethal levels."

Oberheu, John C. EFFECTS ON FISH AND WILDLIFE OF HEPTACHLOR APPLIED TO ERADICATE THE SUGARCANE ROOT WEEVIL IN APOPKA, FLORIDA. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 194-200. 1970 [1971]. *WR 144: 10*

[Bur. Sport Fisheries & Wildl., Atlanta, Ga.] Abstract: A USDA program to eradicate the introduced sugarcane root weevil in the spring of 1969 was studied to assess effects on fish and wildlife. Two basic techniques were utilized: analyses of residue accumulations in selected species, and search for dead animals. Residues increased substantially in birds but not in earthworms, fishes, or aquatic invertebrates. Considerable bird mortality followed treatment and residues in specimens analyzed indicated death from heptachlor poisoning.

Parsons, Jack K., and Billy Don Davis. THE EFFECTS ON QUAIL, MIGRATORY BIRDS AND NON-GAME BIRDS FROM APPLICATION OF MALATHION AND OTHER INSECTICIDES. *Tex. Parks & Wildl. Dep. Tech. Ser.* no. 8. 20 p., 4 figs. 1971. *WR 144: 10*

[Tex. Parks & Wildl. Dep., San Angelo.] Results of a five-year study of the effects on quail, migratory birds and non-game birds of aerial application of malathion and other insecticides indicate that malathion is ten times as toxic to quail and pheasants than guthion, although the reverse is true with mammals.

Pearce, P. A. SIDE EFFECTS OF FOREST SPRAYING IN NEW BRUNSWICK. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 163-170. 1971. *WR 144: 10*

[Canadian Wildl. Serv., Fredericton, New Brunswick, Canada.] A review of some effects on wildlife of a prolonged, large-scale chemical spray operation in the New Brunswick forests against the spruce budworm, *Choristoneura fumiferana*. "DDT spraying was not acutely toxic to birds but thoroughly contaminated the forest environment with persistent residues. The short-lived organophosphate insecticides phosphamidon and fenitrothion, which replaced DDT, damaged bird populations at the dosages used initially. The hazard was reduced when application rates were lowered. Spraying has been successful in protecting the forest, but the budworm outbreak has continued."

Pillmore, R. E., E. L. Flickinger, and M. L. Richmond. FOREST SPRAYING OF ZECTRAN AND ITS SAFETY TO WILDLIFE. *J. Forest.* 69(10): 721-727, illus. Oct. 1971. *WR 144: 11*

[Pacific Southwest Forest & Range Exp. Sta., Berkeley, Calif.] Abstract: The hazard of naled (1,2-dibromo-2,2-dichloroethyl dimethyl phosphate) and Zectran (4-dimethylamino-3,5-xylyl methylcarbamate) to forest birds and mammals was studied. Experimental applications for the control of spruce budworm *(Choristoneura occidentalis)* in Montana and Idaho included one application of naled at 0.4 pound per acre, and four Zectran applications at 0.15 pound per acre or less during a 3-year period. Naled was less effective than Zectran, which was the most promising material found in a search for less persistent and safer insecticides than DDT. We compared bird and mammal counts and observations made before and after treatment on 20-acre plots within both treated and untreated areas, and found no apparent harmful effects of naled and Zectran on birds and mammals studied. The use of the aerosol system of spraying reduced the contamination of the environment by reducing the deposit.

St. Amant, Lyle S. IMPACTS OF OIL ON THE GULF COAST. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 206-217. 1971. *WR 144: 11*

[La. Wild Life & Fisheries Comm., New Orleans.] Description of the Louisiana coast including petroleum resources and environmentally dependent living resources. Effects of extensive petroleum activities on the unstable coast are understood mainly on an immediate basis. Long term effects of oil pollution and environmental change related to the petroleum industry need further investigation.

Shaw, Stanton B. CHLORINATED HYDROCARBON PESTICIDES IN CALIFORNIA SEA OTTERS AND HARBOR SEALS. *Calif. Fish & Game* 57(4): 290-294. Oct. 1971. *WR 144: 11*

[Community Coll., Philadelphia, Pa.] Abstract: Levels of DDT, DDD, DDE and total DDT residues were determined in selected tissues of 10 sea otters [*Enhydra lutris*] and 2 harbor seals [*Phoca vitulina*] from central Californian waters, using gas-liquid chromatography. In both species the highest levels were generally found in fat. In sea otters total residues in fat ranged from 0.41 to 36 ppm wet weight. In harbor seals total residues in the blubbers of the two animals were 18 and 158 ppm wet weight.

Stoewsand, Gilbert S., Judy L. Anderson, Walter H. Gutenmann, Carl A. Bache, and Donald J. Lisk. EGGSHELL THINNING IN JAPANESE QUAIL FED MERCURIC CHLORIDE. *Science* (Washington) 173(4001): 1030-1031, 1 fig. 10 Sept. 1971. *WR 144: 11*

[Agr. Exp. Sta., Cornell Univ., Geneva, N.Y.] Abstract: The eggs produced by developing Japanese quail *(Coturnix coturnix japonica)* fed 1 to 8 parts of mercury per million as mercuric chloride for 10 weeks have thinned shells. Total amounts of mercury in tissues were quite proportional to the dosage and were higher in males than in females. Methylation of mercury was not observed.

Straughan, Dale. OIL POLLUTION AND WILDLIFE AND FISHERIES IN THE SANTA BARBARA CHANNEL. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 219-229. 1971. *WR 144: 11*

[Univ. Southern Calif., Los Angeles.] A brief review of what is known, and what is not known, about the effects of the Santa Barbara oil spill on fish and wildlife.

Switzer, Bruce, Victor Lewin, and Fred H. Wolfe. SHELL THICKNESS, DDE LEVELS IN EGGS, AND REPRODUCTIVE SUCCESS IN COMMON TERNS *(STERNA HIRUNDO)*, IN ALBERTA. *Canadian J. Zool.* 49(1): 69-73. 1971. [From Biol. Abstr. 52(13), 1971.] *WR 144: 11*

[Univ. Alberta, Edmonton, Alberta, Canada.] A comprehensive study of reproductive success of an isolated colony of *S. hirundo* reveals that DDE, the principal chlorinated hydrocarbon insecticide found in the terns, cannot be correlated to eggshell thickness.

Vermeer, Kees. A SURVEY OF MERCURY RESIDUES IN AQUATIC BIRD EGGS IN THE CANADIAN PRAIRIE PROVINCES. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 138-152, 4 figs. 1971. *WR 144: 12*
[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] Summary: A survey was conducted of mercury residues in 22 aquatic bird species at 33 locations in Alberta, Saskatchewan and Manitoba. Mercury levels in eggs of larids and fish-eating birds were generally higher than those in geese and ducks, presumably reflecting differences in feeding habits and biological magnification. Interspecific differences of mercury residues observed in aquatic bird eggs at the same breeding localities may reflect interspecific differences in diet as well as time and length of exposure to mercury. The highest mercury levels were found in herring gulls, which may be related to their scavenging and fish-eating habits. However, herring gull eggs, with mercury levels between 0.5 and 2.0 ppm, hatched successfully. Mercury residues in livers of California gull females averaged 5.5 times higher than in their eggs.

Vos, J. G., J. J. T. W. A. Strik, Catherina W. M. van Holsteÿn, and J. H. Pennings. POLYCHLORINATED BIPHENYLS AS INDUCERS OF HEPATIC PORPHYRIA IN JAPANESE QUAIL, WITH SPECIAL REFERENCE TO 6-AMINOLEVULINIC ACID SYNTHETASE ACTIVITY, FLUORESCENCE, AND RESIDUES IN THE LIVER. *Toxicol. & Appl. Pharmacol.* 20(2): 232-240, 1 fig. Oct. 1971. *WR 144: 12*
[Univ. Utrecht, Utrecht, Netherlands.]

Weeden, Robert B. OIL AND WILDLIFE: A BIOLOGIST'S VIEW. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 242-258. 1971. *WR 144: 12*
[Univ. Alaska, College.] In a brief review of oil-wildlife relationships in Alaska three questions are discussed: Has contemporary Alaskan petroleum development caused serious wildlife problems? --Are important future problems likely, that will be directly attributable to the oil and gas industry? --As oil and gas development catalyzes economic and population growth in Alaska, what consequences to wildlife will result?

Weeden, Robert B., and David R. Klein. WILDLIFE AND OIL: A SURVEY OF CRITICAL ISSUES IN ALASKA. *Polar Rec.* 15(97): 479-494. Jan. 1971. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 12*
[Univ. Alaska, College.]

Zinn, Donald J. THE IMPACTS OF OIL ON THE EAST COAST. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 188-206. 1971. *WR 144: 12*
[Univ. R.I., Kingston.] Survey of oil use on the Atlantic coast, the areas affected by oil pollution, and government pollution control regulations. Recommendations to help overcome actual and potentially disastrous impacts of oil on the east coast are offered.

WILDLIFE--PARASITES & DISEASES

Goreglyad, K. S. [MAIN PRINCIPLES IN CONTROLLING DISEASES OF WILD ANIMALS.] *Trans. IX Int. Congr. Game Biol.* p. 575-579. 1970. In Russian with English summ. *WR 144: 12*
[Akad. Nauk Belorusskoi SSR, Minsk, USSR.]

Hayes, Frank A. DISEASE ASSOCIATED WITH THE IMPORTATION OF WILDLIFE. *Int. Symp. Health Aspects Int. Movement Anim.* p. 154-156. 1969. *WR 144: 12*
[Univ. Ga., Athens.]

Kurashvili, B. E. [THE MAIN INVASIONAL DISEASES OF GAME IN GEORGIA.] *Trans. IX Int. Congr. Game Biol.* p. 721-722. 1970. In Russian with English summ. *WR 144: 12*
[Inst. Zool. Akad. Nauk Gruzinskoi, Tiflis, Georgian SSR.]

Liu, Si-Kwang, and Alfred G. Edward. GASTRIC ULCERS ASSOCIATED WITH *CONTRACAECUM* SPP. (NEMATODA: ASCAROIDEA) IN A STELLER SEA LION AND A WHITE PELICAN. *J. Wildl. Dis.* 7(4): 266-271, 3 figs. Oct. 1971. *WR 144: 13*
[Anim. Med. Center, New York, N.Y.]

Mehl, Reidar. [COLLECTION OF INSECTS AND MITES FROM BIRDS AND MAMMALS.] *Fauna* (Oslo) 23(4): 237-252. 1970. [From J. Mammal. 52(3, suppl.), 1971. In Norwegian with English summ.] *WR 144: 13*

Mehl, Reidar. RECORDS OF ECTOPARASITIC INSECTS AND MITES ON BIRDS AND MAMMALS IN NORWAY. *Norsk Entomol. Tidsskr.* 17(2): 109-113. 1970. [From J. Mammal. 52 (3, suppl.), 1971.] *WR 144: 13*

Pashuk, V. P. [THE STUDY OF TRICHINELLOSIS INFECTED GAME ANIMALS IN BYELORUSSIA.] *Trans. IX Int. Congr. Game Biol.* p. 700-708, 3 figs. 1970. In Russian with English summ. *WR 144: 13*
[Belorusskii Inst. Epidemiol. & Mikrobiol., Minsk, USSR.]

Pasztor, L. [PROTECTION OF GAME HEALTH IN HUNGARY.] *Trans. IX Int. Congr. Game Biol.* p. 580-582. 1970. In Russian with English summ. *WR 144: 13*
[Lab. Game Health, Budakeszi, Hungary.]

Reydellet, M. LA RAGE. EXTENSION ET CARACTERISTIQUES ACTUELLES DE LA MALADIE EN EUROPE OCCIDENTALE. SITUATION EN FRANCE. [RABIES. EXTENSION AND PRESENT STATUS OF THE DISEASE IN WESTERN EUROPE. THE SITUATION IN FRANCE.] *Trans. IX Int. Congr. Game Biol.* p. 583-591, 2 figs. 1970. In French with Russian summ. *WR 144: 13*
[Direction Serv. Vetérinaires, GAP, France.]

Rykovski, A. S. [ON THE PLACE AND ROLE OF HELMINTHS IN THE BIOCENOSIS DYNAMICS.] *Trans. IX Int. Congr. Game Biol.* p. 592-597. 1970. In Russian with English summ. *WR 144: 13*
[Lab. Helminthol. Akad. Nauk USSR, Moscow, USSR.]

Scholtens, Robert G., and Lois Norman. *TRICHINELLA SPIRALIS* IN FLORIDA WILDLIFE. *J. Parasitol.* 57(5): 1103. Oct. 1971. *WR 144: 13*
[Center for Disease Control, Atlanta, Ga.]

Skryabin, K. I. [PREVENTIVE MEASURES AGAINST THE SPREADING OF HELMINTHIASES AMONG GAME ANIMALS.] *Trans. IX Int. Congr. Game Biol.* p. 54-58. 1970. In Russian with English summ. *WR 144: 13*
[Lab. Helminthol. Akad. Nauk USSR, Moscow, USSR.]

Stunkard, Horace W., editor. PROCEEDINGS OF THE SECOND INTERNATIONAL CONGRESS OF PARASITOLOGY / 6-12 SEPTEMBER 1970 / MAYFLOWER HOTEL, WASHINGTON, D. C. *J. Parasitol.* 56(4): Sec. II, Part 1. 389 p. Aug. 1970. *WR 144: 13*
Resumes of contributions presented for discussion in the colloquia of the congress. The following deal with the parasites of wildlife:
General parasite survey--*Parasites of white-tailed deer in relation to epizootiological factors*, William M. Samuel; and *Arthropod parasites of the African elephant* (Loxodonta africana *(Blumenbach)) and the Indian elephant* (Elephas maximus *Linnaeus*). *Taxonomic and biological aspects*, F. Zumpt.
Blood protozoa--*The effects of various stimuli on the peripheral parasitaemia of the* Trypanosoma rotatorium *complex in the bullfrog* (Rana catesbeiana *Shaw*) *of eastern Ontario*, J. E. Bardsley and R. Harmsen; *A model for the ecology of avian malaria*, R. L. Beaudoin, J. E. Applegate, D. E. Davis, and R. G. McLean; *A trypanosome parasite of the western fence lizard*, Sceloporus occidentalis, *growing in insect cell culture media*, Jovett Chao; *Blood parasites of birds in Algonquin Park*, S. S. Desser, A. M. Fallis, and R. A. Khan; *Experimental studies of the life cycle of* Leucocytozoon simondi *in ducks in Norway*, A. Murray Fallis and Arne Eide; *Epizootiology of* Leucocytozoon *in Canada geese* (Branta canadensis),

C. M. Herman, J. Barrow, Jr., and I. B. Tarshis; *On avian malaria in Japan*, Keizaburo Itagaki; *Observations of* Lankesterella *infections in evening grosbeaks* (Hesperiphona vespertina), R. A. Khan; *Preliminary survey of blood-parasites of birds of the area de pesquisas ecológicas do Guamá, Belém, Pará, Brasil*, R. Lainson, J. J. Shaw, and P. S. Humphrey; *Human factors in the epizootiology of avian blood parasites*, Reginald D. Manwell; *Seasonal variation of* Polychromophilus melanipherus *(Sporozoa: Haemoproteidae) in the bent-winged bat* Miniopterus schreibersii *(Chiroptera) in New South Wales*, Barbara B. Dew and Bruce McMillan; *Blood parasites found in some Iowa game birds*, David J. Roslien and Arnold O. Haugen; *Diurnal and seasonal rhythms in parasitemia levels of some trypanosomes infesting* Rana clamitans *from Louisiana*, John Richard Seed; *The effect of* Trypanosoma gambiense *on locomotor rhythms of* Microtus montanus, John Richard Seed and Nezhat Khalili; and *An investigation on rodents (Rodentiae-Muridae) as* Leishmania *reservoir in Turkey*, Sevket Yasarol.

Trichomonad infection--*Factors associated with immunity to trichomoniasis in pigeons*, R. M. Kocan.

Coccidial infection--*On the coccidia of roe deer* (Capreolus capreolus), Adriano Mantovani, Domenico Borrelli, and Giulio Ricci Bitti.

Trematodes--*Observations on* Anchitrema sanguineum *Soneino, 1895 (Trematoda: Dicrocoelidae) from bat*--Scotophilus heathei *Horsfield, 1831*, N. K. Gupta and Santosh Mehta; *On* Vesperugidendrium kalsanense *n. sp. (Trematoda: Lecithodendriidae) from bat*--Pipistrellus dormeri, N. K. Gupta and Santosh Mehta; and *On* Pycnoporus buckleyi *n. sp. (Trematoda: Lecithodendriidae) from bat*--Pipistrellus dormeri *Dobson, 1876*, N. K. Gupta and Santosh Mehta.

Cestodes--*The seasonal variation and geographical distribution of cestodes infesting the black duck* (Anas rubripes) *in New Brunswick, Canada*, J. Daniel McLaughlin and Michael D. B. Burt.

Nematodes--*The ecological relationships of meningeal worm* (Pneumostrongylus tenuis *Dougherty, 1945) and native cervids in North America*, Roy C. Anderson; *An attempt of analysing the biogeography of nematodes of the family Trichostrongylidae, parasitising bats of the suborder Microchiroptera*, V. Barus and B. Rysavy; and *Helminth communities in waterfowl and their relationships with the food habits of the hosts*, John C. Holmes.

Arthropod vectors and arthropod parasites--*The biological change of* Culex tarsalis *and the alteration of* Plasmodium relictum *infectivity to pigeons*, Jowett Chao.--Courtesy/ L. N. Locke.

Stunkard, Horace W., editor. PROCEEDINGS OF THE SECOND INTERNATIONAL CONGRESS OF PARASITOLOGY / 6-12 SEPTEMBER 1970 / MAYFLOWER HOTEL, WASHINGTON, D. C. *J. Parasitol.* 56(4): Sec. II, Part 2. p. 391-489. Aug. 1970. *WR 144: 14*

Resumes of contributions presented for discussion in the colloquia of the congress. The following deal with the parasites of wildlife:

General parasite survey--*On the zoogeography of some parasites of sciurids*, Robert L. Rausch.

Blood protozoa--Plasmodium *species of wild birds in Italy*, Augusto Corradetti; *New antimalarial 8-aminoquinolines: results of screening for schizontocidal and causal prophylactic activity against rodent and avian malaria* (P. vinckei, P. berghei, and P. cathemerium), O. Dann and E. Fink; *Blood parasites of birds trapped in the New Jersey coastal region*, Robert F. Jochen; and *Studies on immunosuppression in rodent malaria*, S. H. Lourie.

Trematodes--*Studies on* Mesocoelium danforthi *Hoffman, 1935 (Trematoda: Brachycoeliidae) and its distribution in the herpetofauna of the Greater Antilles*, Alexander D. Acholonu; and *Biogeographical affinities of digenetic trematodes of African amphibians and reptiles*, John D. Goodman.--Courtesy/ L. N. Locke.

Wilcoxon, Hardy C., William B. Dragoin, and Paul A. Kral. ILLNESS-INDUCED AVERSIONS IN RAT AND QUAIL: RELATIVE SALIENCE OF VISUAL AND GUSTATORY CUES. *Science* (Washington) 171(3973): 826-828, 2 figs. 26 Feb. 1971. *WR 144: 14*

[Auburn Univ., Auburn, Ala.] Abstract: Bobwhite quail, like the rat, learn in one trial to avoid flavored water when illness is induced by a drug 0.5 hour after drinking. In contrast to the rat, quail also learn to avoid water that is merely darkened by vegetable dye. The visual cue is even more salient than the taste cue in quail.

WILDLIFE--PARASITES & DISEASES--Continued

Wilkinson, P. R. *DERMACENTOR* TICKS ON WILDLIFE AND NEW RECORDS OF PARALYSIS. *J. Entomol. Soc. British Columbia* 67: 24-29. 1 Oct. 1970. [From J. Mammal. 52 (3, suppl.), 1971.] *WR 144: 15*

WILDLIFE--OTHER MORTALITY FACTORS

Nicholson, Peter. COUNTS OF ANIMAL CORPSES ON EAST SUFFOLK ROADS BETWEEN SEPTEMBER, 1966-SEPTEMBER, 1968. *Suffolk Natur. Hist.* 15(1): 67-71. July 1969. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 15*

Ueckermann, E. WILDVERLUSTE DURCH DEN STRASSENVERKEHR UND VERKEHRSUNFÄLLE DURCH WILD IM LANDE NORDRHEIN-WESTFALEN IM JAGDJAHR 1967/68. [WILDLIFE LOSSES FROM HIGHWAY TRAFFIC AND ACCIDENTS ATTRIBUTED TO WILDLIFE IN NORTH RHINE-WESTPHALIA DURING THE HUNTING SEASON 1967/68.] *Trans. IX Int. Congr. Game Biol.* p. 158-166. 1970. In German with Russian summ. *WR 144: 15*
[Forschungsstelle Jagdkunde & Wildschadenverhütung, Beuel-Niederholtorf, Germany.]

WILDLIFE--POPULATIONS & FLUCTUATIONS

Abdusalyamov, I. A. [FLUCTUATION IN THE NUMBERS OF GAME ANIMALS AND BIRDS IN TAJIKISTAN AND THE ROLE OF AN ANTHROPOGENIC FACTOR.] *Trans. IX Int. Congr. Game Biol.* p. 785-787. 1970. In Russian with English summ. *WR 144: 15*
[Inst. Zool. & Parazitol. Akad. Nauk Tadzhik. SSR, Dushanbe, USSR.]

Christian, John J., James A. Lloyd, David E. Goldman, and David E. Davis. AN EMPIRICAL FORMULA FOR THE GROWTH OF SOME VERTEBRATE POPULATIONS. *Curr. Mod. Biol.* 4(1): 26-34, illus. 1971. [From Biol. Abstr. 52(19), 1971.] *WR 144: 15*
[Albert Einstein Med. Cent., Philadelphia, Pa.] Trumpeter swans.

Schwarz, S. S. [POPULATION ECOLOGY AS A BACKGROUND OF WILDLIFE MANAGEMENT.] *Trans. IX Int. Congr. Game Biol.* p. 74-77. 1970. In Russian with English summ. *WR 144: 15*
[Inst. Obshch. Biogeocenol. & Ekol. Ural. Fil. Akad. Nauk, Sverdlovsk, USSR.]

Talbot, L. M. THE COUNTS OF GAME ANIMALS IN LARGE TERRITORIES IN NORTH AMERICA AND AFRICA. *Trans. IX Int. Congr. Game Biol.* p. 47-53. 1970. In English with Russian summ. *WR 144: 15*
[Smithsonian Inst., Washington, D.C.]

Uspenski, S. M. [PECULIARITIES IN POPULATION DYNAMICS AND IN UTILIZATION OF GAME RESOURCES IN THE ARCTIC AND SUBARCTIC.] *Trans. IX Int. Congr. Game Biol.* p. 738-741. 1970. In Russian with English summ. *WR 144: 15*
[Inst. Zool. Akad. Nauk Moldavskoi SSR, Kishinev, USSR.]

WILDLIFE--BIOMETRICS

Walters, Carl J., and Fred Bunnell. A COMPUTER MANAGEMENT GAME OF LAND USE IN BRITISH COLUMBIA. *J. Wildl. Mgmt.* 35(4): 644-657, 7 figs. Oct. 1971. *WR 144: 15*
[Univ. British Columbia, Vancouver, British Columbia, Canada.] Abstract: Computer simulation models can be used as *management games* to bring together decision makers on resources. A general computer model, FARMS, was developed to look at land use and big game populations in British Columbia. Represented in the model are plant production and succession, wildlife habitat and food selection, and dynamics of wildlife herds. A simple intervention scheme allows the user to vary harvest rates of game and trees, stocking rates of cattle, and range-burning practices. The model has proven useful in teaching students about the effects of management on wildlife populations. The model may also be useful in research, by helping to define critical interactions and data requirements.

Andrzejewski, R., and E. Nowak. [QUESTIONNAIRE METHOD FOR EVALUATING HARVEST OF SMALL GAME ON VAST AREAS.] *Trans. IX Int. Congr. Game Biol.* p. 391-394. 1970. In Russian with English summ. *WR 144: 16*
[Inst. Ecol. Polish Acad. Sci., Nowy Świat, Poland.]

Egorov, O. V., A. V. Krechmar, Y. V. Labutin, V. I. Perfilyev, M. V. Popov, and Y. V. Revin. [PRINCIPLES AND METHODS OF ESTIMATING NUMBERS OF ANIMALS FROM THE AIR IN YAKUTIA.] *Trans. IX Int. Congr. Game Biol.* p. 262-267. 1970. In Russian with English summ. *WR 144: 16*
Aerial census of wild ungulates, hare, muskrat, tetraonids and tundra waterfowl.

Gilmer, David S., V. B. Kuechle, and I. Joseph Ball, Jr. A DEVICE FOR MONITORING RADIO-MARKED ANIMALS. *J. Wildl. Mgmt.* 35(4): 829-832, 3 figs. Oct. 1971. *WR 144: 16*
[Univ. Minn., Minneapolis.] Abstract: A simple, portable, and economical recording system consisting of a receiver, signal conditioner, recorder, and power source is described. The system was designed to monitor the signal strength from a radio-marked animal at a particular location. Information is stored on recorder chart paper. Radio-marked ducks have been successfully monitored at nest sites, potholes, and other locations.

Györffi, L. [REDUCTION OF VERMIN WITH INTOXICATED EGGS.] *Trans. IX Int. Congr. Game Biol.* p. 228-230. 1970. In Russian with English summ. *WR 144: 16*
[MAVOSZ, Budapest, Hungary.] 300,000 poisoned eggs were laid out. 45,000 predators that perished because of poisoning with these eggs were collected, including magpies--39.5%, crows--28%, rooks--22% and also a great amount of foxes, dogs, cats, polecats, weasels, hedgehogs and jays. Wide use of eggs poisoned with phosdrine for controlling predators that exterminate game is recommended.--From summ.

Hilton, Donald F. J. A TECHNIQUE FOR COLLECTING ECTOPARASITES FROM SMALL BIRDS AND MAMMALS. *Canadian J. Zool.* 48(6): 1445-1446. Nov. 1970. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 16*

Hower, R. O. ADVANCES IN FREEZE-DRY PRESERVATION OF BIOLOGICAL SPECIMENS. *Curator* 13(2): 135-152. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 16*

Ivanov, F. V. [METHODS OF COUNTING GAME ANIMALS IN THE GAME MANAGEMENT AREAS.] *Trans. IX Int. Congr. Game Biol.* p. 307-309. 1970. In Russian with English summ. *WR 144: 16*

Korytin, S. A., and M. P. Vorobyeva. [NEW MEASURING INSTRUMENTS FOR DETERMINING PASSED DISTANCES.] *Trans. IX Int. Congr. Game Biol.* p. 294-297, 4 figs. 1970. In Russian with English summ. *WR 144: 16*
Abstract: Two new types of instruments are described: a) instrument for measuring distance passed by ski (it counts number of paired steps); b) instrument for measuring distance passed on foot irrespective of number and size of steps made.

Larin, S. A. [FORECASTING CHANGES IN THE NUMBERS OF FOREST GAME IN THE USSR.] *Trans. IX Int. Congr. Game Biol.* p. 252-254. 1970. In Russian with English summ. *WR 144: 16*

Molokanov, B. V. [INCREASING NUMBERS OF WILD ANIMALS BY BIOTECHNIYAN ARRANGEMENTS IN THE PERESLAVL STATE FOREST AND GAME AREA.] *Trans. IX Int. Congr. Game Biol.* p. 224-227. 1970. In Russian with English summ. *WR 144: 16*

Osmolovskaya, V. I. [MAPPING OF NUMBERS AND DISTRIBUTION OF GAME ANIMALS ON A VAST TERRITORY.] *Trans. IX Int. Congr. Game Biol.* p. 276-283, 8 figs. 1970. In Russian with English summ. *WR 144: 17*
[Mosk. Gosudarst. Univ., Moscow, USSR.]

Priklonski, S. G. [COUNTS OF GAME ANIMALS ON VAST TERRITORIES IN THE USSR.] *Trans. IX Int. Congr. Game Biol.* p. 258-261. 1970. In Russian with English summ. *WR 144: 17*
Game mammals and game birds of the USSR.

Priklonski, S. G. [WINTER TRANSECT COUNT OF GAME ANIMALS.] *Trans. IX Int. Congr. Game Biol.* p. 273-275. 1970. In Russian with English summ. *WR 144: 17*

Smirnov, V. S. [EVALUATION OF ACCURACY OF THE RESULTS OF COUNT OF ANIMAL NUMBERS.] *Trans. IX Int. Congr. Game Biol.* p. 268-272. 1970. In Russian with English summ. *WR 144: 17*

Turner, David W. MAIL SURVEYS OF HUNTING-PRECISION AND SAMPLE SIZE. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 292-303, 9 figs. 1970 [1971]. *WR 144: 17*
[N.C. State Univ., Raleigh.] Abstract: Several Southeastern states using mail surveys currently apply an estimation procedure to adjust for nonresponse bias. Efficient planning of these surveys requires an idea of the precision obtainable for a specified number of questionnaires mailed, *i.e.* an idea of the sample size required. This paper graphically describes the empirical relation between sample size and relative precision of estimates of hunters, effort, and harvest for three game species, deer, turkey and dove. The data were selected from records on hand from six states and over the period from 1964-1969.

Vučković, M. PROTECTION OF GAME AS A BASIC PREREQUISITE FOR THE INTENSIFICATION OF NATURAL REPRODUCTION IN THE HUNTING GROUNDS OF THE SOCIALIST REPUBLIC OF MONTENEGRO. *Trans. IX Int. Congr. Game Biol.* p. 219-223, 2 figs. 1970. In English with Russian summ. *WR 144: 17*

Whitehead, Clifton J., Jr., and William L. Turner. COMPUTER APPLICATION TO DRAWINGS FOR SPECIAL PERMITS. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 32-36. 1969 [1970]. *WR 144: 17*
[Tenn. Game & Fish Comm., Nashville.] A random interval sampling technique was used for selecting eligible applicants. The system was put through an actual test involving over 16,000 deer permit applicants competing for their choice of one of 35 hunt dates on 11 different wildlife management areas. Tests indicated that the fully automated system yielded comparable results with manual systems at reduced costs and time, and provided the applicant with a greater variety of choices of hunt dates and areas. Methods, associated problems, advantages, and disadvantages are discussed.--From abstr.

Yurgenson, P. B. [CENSUS OF WINTER GAME NUMBERS BY THE METHOD OF PELLET GROUP COUNT.] *Trans. IX Int. Congr. Game Biol.* p. 287-288. 1970. In Russian with English summ. *WR 144: 17*
"European moose *(Alces alces)*, roe deer and other deer, and tetraonids."

WILDLIFE--MANAGEMENT & RESEARCH, GENERAL

Bump, G. THE PURPOSE, PRODUCTIVITY AND LIMITATIONS OF GAME FARMS. *Trans. IX Int. Congr. Game Biol.* p. 126-128. 1970. In English with Russian summ. *WR 144: 17*
[Bur. Sport Fisheries & Wildl., Washington, D.C.]

Chambers, Robert E. STATUS OF NON-GAME WILDLIFE PROGRAMS--OUR RESPONSIBILITY. *Trans. NE Sect. Wildl. Soc., 28th NE Fish & Wildl. Conf.* p. 1-7. 1971. *WR 144: 18*

[N.Y. State Coll. Forest., Syracuse.] All states and provinces were surveyed by means of a questionnaire to determine the extent and nature of their involvement with programs on non-game wildlife species. Thirty-two of the 48 responding agencies indicated such an involvement; seven of the eight responding Northeastern States had such programs. Programs relative to endangered species and to control of predatory and nuisance animals far outnumbered programs of any other kind. Seven agencies reported involvement in habitat acquisition and management for non-game birds, and four or fewer agencies had programs of any other kind. Personnel and budgetary inputs by nearly all involved agencies was very low; only four committed more than three percent of their budget to such endeavors. Lack of funds and lack of personnel were the most frequently stated reasons for lack of further involvement. Only six agencies indicated that they had no legal jurisdiction over non-game wildlife.--From abstr.

Hamilton, Lawrence S. ECOLOGICAL RELATIONSHIPS AND THE LAND USE PLANNING PROCESS IN A WATERSHED. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 71-81. 1971. *WR 144: 18*

[Cornell Univ., Ithaca, N.Y.] A detailed example of a new approach to land use planning in which an area under scrutiny is considered as an ecosystem. Effects of additions to the ecosystem are determined for each factor characterizing the system. Changes and directions of change are predicted by ecologists, then used to guide planning decisions.

Hendee, John C., and Dale R. Potter. HUMAN BEHAVIOR AND WILDLIFE MANAGEMENT: NEEDED RESEARCH. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 383-396. 1971. *WR 144: 18*

[Pacific Northwest Forest & Range Exp. Sta., Seattle, Wash.] More research is needed on human behavior aspects of wildlife. Several broad areas to which research should be directed are: hunting satisfaction, non-consumptive use of wildlife, the hunter population, access and hunting opportunity, wildlife economics, and political-legal issues.

Khaidav, P. [THE OUTLOOKS OF WILDLIFE MANAGEMENT IN THE MONGOLIAN PEOPLE'S REPUBLIC.] *Trans. IX Int. Congr. Game Biol.* p. 742-745. 1970. In Russian with English summ. *WR 144: 18*

Korsakov, G. K., and B. A. Larin. [WAYS OF RAISING THE PRODUCTIVITY OF HUNTING GROUNDS.] *Trans. IX Int. Congr. Game Biol.* p. 732-737. 1970. In Russian with English summ. *WR 144: 18*

Küchler, O. DAS JAGDWESEN IN DER TSCHECHOSLOWAKEI. [WILDLIFE MANAGEMENT IN CZECHOSLOVAKIA.] *Trans. IX Int. Congr. Game Biol.* p. 850-856. 1970. In German with Russian summ. *WR 144: 18*

[Hunting Div., Min. Agr., Prague, Czechoslovakia.]

Lavrov, N. P. [INCREASING THE PRODUCTIVITY OF HUNTING GROUNDS IN THE USSR BY INTRODUCING NEW SPECIES OF CARNIVORES.] *Trans. IX Int. Congr. Game Biol.* p. 196-200. 1970. In Russian with English summ. *WR 144: 18*

"Mustela vison, Nyctereutes procyonoides and *Procyon lotor."*

Leuthold, W. ETHOLOGY AND GAME MANAGEMENT. *Trans. IX Int. Congr. Game Biol.* p. 78-88. 1970. In English with Russian summ. *WR 144: 18*

[Tsavo Res. Project, Kenya Nat. Parks, P.O. Box 14, Voi, Kenya.]

Ling, H. [COUNTING OF GAME WITH THE ASSISTANCE OF GROUPS OF HUNTERS.] *Trans. IX Int. Congr. Game Biol.* p. 284-286. 1970. In Russian with English summ. *WR 144: 18*

[Tartuskii Gosudarst. Univ., Tartu, USSR.]

Marakov, S. V. [ISLAND HUNTING GROUNDS OF THE NORTH PACIFIC AND WAYS OF INCREASING THEIR PRODUCTIVITY.] *Trans. IX Int. Congr. Game Biol.* p. 781-784. 1970. In Russian with English summ. *WR 144: 19*

Mussehl, Thomas W., and F. W. Howell, editors. GAME MANAGEMENT IN MONTANA. *Mont. Fish & Game Dep.* xii + 238 p., illus. 1971. *WR 144: 19*

A report on the development and progress of 25 years of game management under the Pittman-Robertson program. A description of each species including photographs, information about management, hunting and harvest, and the future outlook is given under three categories: big game management, game bird management, and fur management. Background sections on Montana, its early history and a survey of game management during 1941-1970 are also included.

Mutafov, L. [ARTIFICIAL BREEDING OF GAME IN THE PEOPLE'S REPUBLIC OF BULGARIA.] *Trans. IX Int. Congr. Game Biol.* p. 91-94. 1970. In Russian with English summ. *WR 144: 19*

[Veterinarno.-Med. Fakultet, Sofia, Bulgaria.]

Ohio Dep. Natur. Resour., Div. Wildl. REASONS FOR SEASONS / HUNTING AND TRAPPING. *Ohio Dep. Natur. Resour., Div. Wildl. Publ.* 68. iv + 46 p., 32 figs. 1971. *WR 144: 19*

Background information essential for evaluation of the annual recommendations for Ohio's hunting and trapping seasons. The material is in two categories: (1) the presentation and analysis of research findings, population inventories and harvest data; and (2) the reasoning followed each year in deciding what seasons and regulations will best satisfy the objectives of maintaining the wildlife resource and providing maximum sustained utilization of this resource.--From preface.

Parker, H. Dennison, Jr. INFRARED "EYES" FOR GAME MANAGEMENT. *Colo. Outdoors* 20(6): 35-38, illus. Nov.-Dec. 1971. *WR 144: 19*

[Colo. State Univ., Fort Collins.] Use of thermal infrared optical-mechanical scanners to detect deer in their natural surroundings is described.

Pavlov, M. P. [RECONSTRUCTION OF THE FAUNA OF GAME ANIMALS AND ITS IMPORTANCE FOR INCREASING PRODUCTIVITY OF HUNTING GROUNDS IN THE USSR.] *Trans. IX Int. Congr. Game Biol.* p. 129-135. 1970. In Russian with English summ. *WR 144: 19*

"Acclimatization of game animals for period 1928-1967 in USSR."

Popov, V. A. [BIOGROCENOLOGY AND GAME MANAGEMENT.] *Trans. IX Int. Congr. Game Biol.* p. 39-46. 1970. In Russian with English summ. *WR 144: 19*

[Kazanskii Gosudarstvennii Univ., Kazan, USSR.]

Reynolds, Hudson G. GAME PRODUCTION AND HARVEST IN CZECHOSLOVAKIA. *J. Forest.* 69(10): 736-740, illus. Oct. 1971. *WR 144: 19*

[Rocky Mountain Forest & Range Exp. Sta., Tempe, Ariz.] Abstract: Game-keeping in Czechoslovakia is similar to that in other countries of central Europe because of the common aristocratic origin of the hunting tradition. Ownership of game by the state resembles that of Poland, but differs from West Germany and Austria where game belongs to the landowner. Regardless of ownership, the basic objective of game management remains the same--maintenance of quality game populations in harmony with forestry and agriculture. Game management is intensive as reflected by plans for breeding, winter feeding of hooved game, carefully detailed harvest, and strict hunter qualification. Intensification of game management in America, if the European experience is guideworthy, will probably require greater direct and indirect participation by the hunter in environmental concerns at local and national levels.

Tavrovski, V. A. [EXPERIENCE OF DIVIDING YAKUTIA INTO HUNTING ECONOMIC DISTRICTS.] *Trans. IX Int. Congr. Game Biol.* p. 776-780, 1 fig. 1970. In Russian with English summ. *WR 144: 19*

[Zool. Inst. Akad. Nauk USSR, Leningrad, USSR.]

Wagenknecht, E. NOTWENDIGKEIT UND MÖGLICHKEITEN DER STEIGERUNG DER JAGD-WIRTSCHAFTLICHEN PRODUKTIVITÄT IN DER DEUTSCHEN DEMOKRATISCHEN REPUBLIK. [THE NECESSITY AND FEASIBILITY OF INCREASING WILDLIFE PRODUCTIVITY IN THE GERMAN DEMOCRATIC REPUBLIC.] *Trans. IX Int. Congr. Game Biol.* p. 727-731. 1970. In German with Russian summ. *WR 144: 20*
[Inst. Forstwissenschaften Eberswalde, Eberswalde, Germany.]

Zasmeta, V. [SOME ASPECTS OF THE HUNTING ECONOMY IN THE ČSSR.] *Trans. IX Int. Congr. Game Biol.* p. 865-867. 1970. In Russian with English summ. *WR 144: 20*

Zhezlova, V. [SOME DATA CONCERNING THE DEVELOPMENT OF SCIENTIFIC PRINCIPLES OF FEEDING GAME.] *Trans. IX Int. Congr. Game Biol.* p. 95-101. 1970. In Russian with English summ. *WR 144: 20*
"Phasianus colchicus, Perdix perdix and *Anas platyrhynchos."*

Zhitenko, P. V. [PROPERTIES OF MEAT OF WILD ANIMALS.] *Trans. IX Int. Congr. Game Biol.* p. 932-938. 1970. In Russian with English summ. *WR 144: 20*

WILDLIFE--HUNTING AREAS & PROBLEMS

Novikov, G. A. [PREDATORY AND HOOFED MAMMALS UNDER THE CONDITIONS OF DENSELY POPULATED AREAS WITH SPECIAL REFERENCE TO LENINGRAD REGION.] *Trans. IX Int. Congr. Game Biol.* p. 755-759. 1970. In Russian with English summ. *WR 144: 20*
[Leningrad Gosudarst. Univ., Leningrad, USSR.]

WILDLIFE--INTRODUCTIONS

Aliev, F. F. [RESULTS AND OUTLOOKS FOR THE ACCLIMATIZATION OF MAMMALS AND BIRDS IN THE CAUCASUS.] *Trans. IX Int. Congr. Game Biol.* p. 167-169. 1970. In Russian with English summ. *WR 144: 20*
[Inst. Zool. Akad. Nauk Azerbaidzhan. SSR, Baku, Azerbaidzhan, USSR.]

Bump, Gardiner, and others. SYMPOSIUM / INTRODUCTION OF EXOTIC ANIMALS: ECOLOGIC AND SOCIOECONOMIC CONSIDERATIONS. *Caesar Kleberg Res. Program Wildl. Ecol., Tex. A&M Univ.* 25 p. 9 Oct. 1968. *WR 144: 20*
Contents: *Exotics and the role of the State-Federal Foreign Game Investigation Program*, Gardiner Bump; *State views of governmental and private programs of introductions of exotic animals*, Charles W. Ramsey; *Game ranching potentials in North America*, Raymond F. Dasmann; *Uses of exotic animals in a commercial hunting program*, Charles Schreiner III; *Introduced animals and their implications in range vegetation management*, Thadis W. Box; *Quarantine and health problems associated with introductions of animals*, Richard L. Parker; and *Protecting the United States against diseases of foreign origin*, Claude A. Smith.

Bump, G. ACCLIMATIZATION OF GAME ANIMALS IN THE UNITED STATES. *Trans. IX Int. Congr. Game Biol.* p. 136-141. 1970. In English with Russian summ. *WR 144: 20*
[Bur. Sport Fisheries & Wildl., Washington, D.C.] Birds and mammals.

Perret, N. G. EVALUATION OF GAME HABITATS IN CANADA. *Trans. IX Int. Congr. Game Biol.* p. 59-62. 1970. In English with Russian summ. *WR 144: 20*
[Canadian Wildl. Serv., Ottawa, Ontario, Canada.]

WILDLIFE--ECONOMIC & OTHER VALUES

Jońca, Edmund. UDZIAŁ ZWIERZĄT W PROCESACH MODELUJĄCYCH POWIERZCHNIĘ ZIEMI. [THE ROLE OF ANIMALS IN EARTH-SURFACE MODELING PROCESSES.] *Wszechświat* 7/8. p. 189-190, illus. 1970. [From Biol. Abstr. 52(19), 1971. In Polish.] *WR 144: 20*
[Polish Copernicus Soc. Nat., Warsaw, Poland.]

Spillet, Juan J. ECONOMIC ASPECTS OF WILDLIFE CONSERVATION: VALUES OF CONSUMPTIVE AND NON-CONSUMPTIVE USES OF WILDLIFE SPECIES. *IUCN Publ., New Ser.* (Morges) 17: 121-129. 1970. [From J. Mammal. 52(3, suppl.), 1971. In English with French summ.] *WR 144: 21*

WILDLIFE--FOOD HABITS & TECHNIQUES

Harshbarger, Thomas J., and Burd S. McGinnes. NUTRITIVE VALUE OF SOURWOOD LEAVES. *J. Wildl. Mgmt.* 35(4): 668-673. Oct. 1971. *WR 144: 21*
[Southeastern Forest Exp. Sta., Tifton, Ga.] Abstract: Green and dead leaves of sourwood *(Oxydendrum arboreum)* were analyzed to determine seasonal changes in nutritive and mineral composition. In general, percentages of leaf calcium, phosphorus, fat, fiber, ash, iron, potassium, manganese, and sodium were greater in green leaves, whereas total nitrogen (crude protein) and copper were less. After leaf abscission, percentages of nitrogen-free extract, ash, manganese, phosphorus, and potassium decreased, whereas total nitrogen slightly increased. Green and fallen leaves of sourwood contain higher levels of total nitrogen and nitrogen-free extract and lower levels of crude fiber than have been previously reported for twig ends of many eastern browse plants.

WILDLIFE--PREDATION, CROP DAMAGE, CONTROL

Conway, William G. PREDATION ON PENGUINS AT PUNTA TOMBO. *Anim. Kingdom* 74 (4): 2-8, illus. Aug. 1971. *WR 144: 21*
The predation of the Patagonian sea lion *Otaria bryonia* on Magellanic penguins *Spheniscus magellanicus* is reported for the first time at Punta Tombo, Chubut, Argentina.

Frank, H. DIE AUSWIRKUNG VON RAUBWILD- UND RAUBZEUGMINDERUNG AUF DIE STRECKEN VON HASE, FASAN UND REBHUHN IN EINEM REVIER MIT INTENSIVSTER LANDWIRTSCHAFTLICHER NUTZUNG. [THE EFFECTS OF THE DECREASE IN PREDATORS AND PREDATION UPON THE HARVEST OF RABBITS, PHEASANTS AND PARTRIDGES IN A DISTRICT WITH INTENSIVE AGRICULTURAL PRODUCTION.] *Trans. IX Int. Congr. Game Biol.* p. 472-479, 7 figs. 1970. In German with Russian summ. *WR 144: 21*
[Forschungsstelle Jagdkunde & Wildschadenverhütung, Beuel-Niederholtorf, Germany.]

Kostin, Y. V. [SOME ASPECTS OF THE PREDATOR-PREY PROBLEM IN THE WILDLIFE MANAGEMENT AND FORESTRY OF THE MOUNTAIN PART OF THE CRIMEA.] *Trans. IX Int. Congr. Game Biol.* p. 502-504. 1970. In Russian with English summ. *WR 144: 21*

Pimlott, D. H. PREDATION AND PRODUCTIVITY OF GAME POPULATIONS IN NORTH AMERICA. *Trans. IX Int. Congr. Game Biol.* p. 63-73. 1970. In English with Russian summ. *WR 144: 21*
[Sci. Counc. Canada, 150 Kent St., Ottawa, Ontario, Canada.]

Samuelson, Paul A. GENERALIZED PREDATOR-PREY OSCILLATIONS IN ECOLOGICAL AND ECONOMIC EQUILIBRIUM. *Proc. Nat. Acad. Sci. USA* 68(5): 980-983, illus. 1971. [From Biol. Abstr. 52(19), 1971.] *WR 144: 21*
[Mass. Inst. Technol., Cambridge.]

Shagdarsuren, O. ["PREDATOR-PREY" PROBLEM IN A STEPPE BIOCENOSIS OF THE MONGOLIAN PEOPLE'S REPUBLIC.] *Trans. IX Int. Congr. Game Biol.* p. 481-482. 1970. In Russian with English summ. *WR 144: 21*
[Biol. Inst. Akad. Nauk MNR, Ulan-Bator, Mongolian Republic.]

Shuyler, H. R. CONTROL OF RODENTS AND GRAIN-EATING BIRDS. *FAO Regular Programme* (Rome) *RP* 7: 1-15. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 21*

Sludski, A. A. [THE "PREDATOR-PREY" PROBLEM IN THE WILDLIFE MANAGEMENT OF KAZAKHSTAN.] *Trans. IX Int. Congr. Game Biol.* p. 467-471. 1970. In Russian with English summ. *WR 144: 22*
[Inst. Zool. Akad. Nauk Kazakh. SSR, Alma-Ata, USSR.]

VanDruff, Larry Wayne. THE ECOLOGY OF THE RACCOON AND OPOSSUM, WITH EMPHASIS ON THEIR ROLE AS WATERFOWL NEST PREDATORS. *Ph.D. thesis, Cornell Univ.* xi + 140 p., 6 figs. Sept. 1971. *WR 144: 22*
A 35-month study of the ecology of the raccoon *(Procyon lotor)* and the opossum *(Didelphis marsupialis)* inhabiting a wetland, waterfowl-production area was conducted on the Montezuma National Wildlife Refuge in central New York. Success of 356 duck nests in a flooded, green-timber forest averaged 32% for 5 years. The raccoon accounted for most of the destruction. Of 161 nests observed in unflooded, non-timbered habitats, 41% were successful. The opossum destroyed one-fourth of the nests in such areas. Predator control measures and other management implications are discussed.--From abstr.

WILDLIFE--REPORTS OF ORGANIZATIONS & REPORTS OF HARVESTS

Preno, William L., and Ronald F. Labisky. ABUNDANCE AND HARVEST OF DOVES, PHEASANTS, BOBWHITES, SQUIRRELS, AND COTTONTAILS IN ILLINOIS, 1956-69. *Ill. Dep. Conserv. Tech. Bull.* no. 4. 76 p., 24 figs. Oct. 1971. *WR 144: 22*
[Ill. Dep. Conserv., Springfield.] "This report presents statewide abundance and harvest statistics for six game species in Illinois for the 14 years, 1956-69 (in some cases, 15 years, 1955-69). These six species are the mourning dove *(Zenaidura macroura)*, pheasant *(Phasianus colchicus)*, bobwhite *(Colinus virginianus)*, eastern fox squirrel *(Sciurus niger)*, eastern gray squirrel *(Sciurus carolinensis)*, and eastern cottontail *(Sylvilagus floridanus)*."

WETLANDS & WILDLIFE

Barstow, C. J. IMPACT OF CHANNELIZATION ON WETLAND HABITAT IN THE OBION-FORKED DEER BASIN, TENNESSEE. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 363-373. 1971. *WR 144: 22*
[Tenn. Game & Fish Comm., Nashville.] The authorized Corps of Engineers project has caused substantial damages to the wetland ecosystem of the Obion and Forked Deer Rivers. Completion of the channel project will, in time, almost eliminate fish and wildlife resources via drainage and woodland conversion.--From summ.

Korsakov, G. K. [BIOTECHNIYA AS A METHOD OF INCREASING BIOLOGICAL PRODUCTIVITY IN WATER HUNTING AREAS.] *Trans. IX Int. Congr. Game Biol.* p. 142-145. 1970. In Russian with English summ. *WR 144: 22*

Larson, Joseph S. PROGRESS TOWARD A DECISION-MAKING MODEL FOR PUBLIC MANAGEMENT OF FRESH-WATER WETLANDS. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 376-382. 1971. *WR 144: 22*
[Univ. Mass., Amherst.] A coordinated team approach to an array of variables in wetland management decisions. The role of wetlands as physical moderators of surface flood waters is not covered.

FARMLAND & WILDLIFE

Brüll, H. ÜBER DIE BEDEUTUNG DER PFLANZEN FÜR DIE NIEDERWILDHEGE. [ON THE IMPORTANCE OF PLANTS FOR THE PRESERVATION OF SMALL GAME.] *Trans. IX Int. Congr. Game Biol.* p. 201-207, 2 figs. 1970. In German with Russian summ. *WR 144: 22*
[Schleswig-Holstein. Forschungsta. Wild, Wald & Flur, Hartenholm, Germany.] *"Perdix perdix, Phasianus colchicus* and *Lyrurus tetrix."*

RANGELAND & WILDLIFE

Stalfelt, Finn. BIOTOPINVENTERING INOM ETT OMRADE I VARMLAND MED HANSYN TILL VILTETS BETESUTNYTTJANDE. [INVESTIGATION OF BROWSING ON THE SHRUB VEGETATION IN AN AREA OF VARMLAND.] *Zool. Revy* 32(2/3): 67-70. 1970. [From Biol. Abstr. 52(24), 1971. In Swedish with English summ.] *WR 144: 23*
[Zool. Inst. Univ., Stockholm, Sweden.]

FORESTLAND--FORESTRY & ECOLOGY

Holder, Trusten H. THE DESTRUCTION OF OUR MOST VALUABLE WILDLIFE HABITAT. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 13-18. 1969 [1970]. *WR 144: 23*
[Little Rock, Ark.] Hardwoods acreage in the Delta Region of Arkansas has decreased from more than 4 million in 1940 to less than 2 million in 1969.

FORESTLAND--MANAGEMENT FOR & DAMAGE BY WILDLIFE

Halls, L. K. IMPROVING WILDLIFE HABITAT IN PINE-HARDWOOD FORESTS OF THE SOUTHERN UNITED STATES. *Trans. IX Int. Congr. Game Biol.* p. 151-154. 1970. In English with Russian summ. *WR 144: 23*
[Southern Forest Exp. Sta., Nacogdoches, Tex.]

Jović, D. [GENERAL PRINCIPLES OF MANAGING MONO-AGE FORESTS IN FORESTRY AND GAME MANAGEMENT.] *Trans. IX Int. Congr. Game Biol.* p. 763-767. 1970. In Russian with English summ. *WR 144: 23*
[Belgrade Univ., Belgrade, Yugoslavia.]

Murphy, Dean A., and Hewlette S. Crawford. WILDLIFE FOODS AND UNDERSTORY VEGETATION IN MISSOURI'S NATIONAL FORESTS. *Mo. Dep. Conserv. Tech. Bull.* no. 4. 47 p., 14 figs. 1970. *WR 144: 23*
[Mo. Dep. Conserv., Columbia.] Description of study area, techniques, forest types, vegetative production by forest types, preferred deer and turkey foods, fruit-producing trees and shrubs, carrying capacity for deer, and effects of timber harvest and stand improvement.

Padaiga, V. I. [CLEAR WOOD-CUTTING AS A WAY OF INCREASING FORAGE PRODUCTIVITY OF THE FOREST HUNTING AREAS.] *Trans. IX Int. Congr. Game Biol.* p. 768-772. 1970. In Russian with English summ. *WR 144: 23*
[Litovskii Nauchno-Issled. Inst. Lesnogo Khoz., Kaunas, USSR.]

Sokolov, G. A. [THE IMPORTANCE OF GAME AS A COMPONENT OF FOREST PRODUCTIVITY.] *Trans. IX Int. Congr. Game Biol.* p. 760-762. 1970. In Russian with English summ. *WR 144: 23*

STRIPPED LAND & MISCELLANEOUS HABITATS

Oetting, Robert B. RIGHT-OF-WAY RESOURCES OF THE PRAIRIE PROVINCES. *Blue Jay* 29(4): 179-183, illus. Dec. 1971. *WR 144: 23*
[Manitoba Dep. Mines, Winnipeg, Manitoba, Canada.] Rights-of-way of provincial trunk highways, roads, and railroads offer a great potential for wildlife habitat--more than 2 million acres in the Prairie Provinces.

CONTROL OF VEGETATION WITH HERBICIDES, ETC.

McNease, Larry L., and Leslie L. Glasgow. EXPERIMENTAL TREATMENTS FOR THE CONTROL OF WIREGRASS AND SALTMARSH GRASS IN A BRACKISH MARSH. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 127-145, 1 fig. 1970 [1971]. *WR 144: 23*
[La. Wild Life & Fisheries Comm., Grand Chenier.] Sampling data for 1970 (five years following initial treatment) showed that (a) tilling, (b) burning

and tilling, and (c) burning, tilling, and chemicals were most effective in reducing the growth of undesirable vegetation and promoting the growth of a more desirable species, widgeongrass *(Ruppia maritima)*. Reinvasion by widgeongrass varied from a high of 48% coverage to a low of three percent for the plots which received one of the three treatments named above. Reinvasion by desirable species of *Scirpus* was nil after a five-year period. Chemicals and combinations of burning and chemicals gave good short term kills; however, after a one-year period the percent kill dropped off appreciably.--From abstr.

Norris, Logan A. CHEMICAL BRUSH CONTROL: ASSESSING THE HAZARD. *J. Forest.* 69(10): 715-720, illus. Oct. 1971. *WR 144: 24*

[Northwest Forest & Range Exp. Sta., Corvallis, Oreg.] Abstract: An adequate evaluation of the hazard associated with the use of any chemical agent requires consideration of both the toxicity of the material and the potential for exposure of nontarget organisms. The hazard can be high only if both the toxicity of the chemical and the potential for exposure to a significant dose are high. The relatively large doses of 2,4-D, amitrol, 2,4,5-T, and piclorem required to produce acutely toxic responses in most nontarget organisms are not likely to occur from normal chemical brush control operations on forest lands. The short persistence, lack of biomagnification in food chains, and the rapid excretion of these herbicides by animals preclude chronic exposure and, therefore, chronic toxicity. A long history of field use and research shows our common brush control chemicals can be used with minimum hazard to the quality of our environment.

MAMMALS--GENERAL

Alcala, Angel C., and Walter C. Brown. NOTES ON THE FOOD HABITS OF THREE PHILIPPINE WILD MAMMALS. *Silliman J.* 16(1): 91-94. 1969. [From Biol. Abstr. 52(22), 1971.] *WR 144: 24*

[Silliman Univ., Dumaguete City, Philippines.] Food analyses are presented for *Paradoxurus philippinensis, Viverra tangalunga* and *Felis minuta* based on droppings, stomach analysis and different food types offered to captive animals.

Bothma, J. du P. FOOD HABITS OF SOME CARNIVORA (MAMMALIA) FROM SOUTHERN AFRICA. *Ann. Transvaal Mus.* 27(2): 15-26. 31 Mar. 1971. [From J. Mammal. 52 (4, suppl.), 1971.] *WR 144: 24*

Brink, F.-H. van den. DISTRIBUTION AND SPECIATION OF SOME CARNIVORES. *Mammal. Rev.* 1(3): 67-78 + 2 pls. Aug. 1970. [From J. Mammal. 52(4, suppl.), 1971. In English with French summ.] *WR 144: 24*

Cunningham, Ernest B. A COUGAR KILLS AN ELK. *Canadian Field-Natur.* 85(3): 253-254. July-Sept. 1971. *WR 144: 24*

[Lethbridge Community Coll., Lethbridge, Alberta, Canada.] Abstract: On December 19, 1967 a cougar, *Felis concolor* killed an adult male elk, *Cervus canadensis* in Banff National Park. The carcass and kill site were examined in detail the following day. Fresh snow permitted reconstruction of the probable sequence of events leading up to the kill. These events and the manner in which the cougar fed on the elk are described in detail.

Dash, Y. [THE PROBLEM OF RESTORING GAME RESOURCES OF SIBERIAN MARMOT AND MONGOLIAN GAZELLE IN THE MONGOLIAN PEOPLE'S REPUBLIC.] *Trans. IX Int. Congr. Game Biol.* p. 255-257. 1970. In Russian with English summ. *WR 144: 24*

"Marmota sibirica and *Gazella gutturosa."*

Folk, G. Edgar, Jr., Mary A. Folk, and Ferdinand Kreuzer. IS COLD ACCLIMATIZATION NECESSARY FOR MAMMALIAN HIBERNATION? *Proc. Iowa Acad. Sci.* 77: 149-157. 1970. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 24*

Hadaway, Henry C., and James R. Newman. DIFFERENTIAL RESPONSES OF FIVE SPECIES OF SALT MARSH MAMMALS TO INUNDATION. *J. Mammal.* 52(4): 818-820. Nov. 1971. *WR 144: 25*
[Peace Corps Box 147, Nuku-Alofa, Tonga, South Pacific.] *"Mus musculus, Peromyscus maniculatus, Microtus californicus, Sorex sinuosus* and *Reithrodontomys raviventris."*

Korytin, S. A. [ON RELATIONS BETWEEN PREDATORS AND PREDATOR AND ITS PREY.] *Trans. IX Int. Congr. Game Biol.* p. 488-492, 1 fig. 1970. In Russian with English summ. *WR 144: 25*
"Mammals."

Massoia, Elio, and Abel Fornes. EL ESTADO SISTEMATICO, DISTRIBUCIÓN GEOGRAFICA Y DATOS ETOECOLOGICOS DE ALGUNOS MAMIFEROS NEOTROPICALES (MARSUPIALIA Y RODENTIA) CON LA DESCRIPCIÓN DE *CABRERAMYS*, GENERO NUEVO (CRICETIDAE). [SYSTEMATIC STATE, GEOGRAPHIC DISTRIBUTION AND AUTOECOLOGIC DATA OF SOME NEOTROPICAL MAMMALS (MARSUPIALIA AND RODENTIA) WITH THE DESCRIPTION OF A NEW GENUS *CABRERAMYS* (CRICETIDAE).] *Acta Zool. Lilloana* 23: 407-430, illus. 1967. [From Biol. Abstr. 52(22), 1971. In Spanish with English summ.] *WR 144: 25*
[Inst. Natur. Tecnol. Agropecuar., Buenos Aires, Argentina.]

Nekipelov, N. V. [THE IMPORTANCE OF ACCESSORY FOODS FOR SPECIALIZATION OF THE PREDATORY MAMMALS.] *Trans. IX Int. Congr. Game Biol.* p. 493-498. 1970. In Russian with English summ. *WR 144: 25*

Panov, E. N. [INBREEDING IN WILD ANIMALS.] *Priroda* (Moscow) 2: 119-120. Feb. 1971. [From J. Mammal. 52(3, suppl.), 1971. In Russian.] *WR 144: 25*

Petrides, G. A., and U. de V. Pienaar. CALCULATION AND ECOLOGICAL INTERPRETATION OF PREY PREFERENCES OF LARGE PREDATORS IN KRUGER NATIONAL PARK. *Trans. IX Int. Congr. Game Biol.* p. 499. 1970. In English with Russian summ. *WR 144: 25*
[Mich. State Univ., East Lansing.]

Saint Girons, Marie-Charlotte, and Vratislav Mazak. DONNÉES MORPHOLOGIQUES SUR QUELQUES MICROMAMMIFERES EN LAPONIE. [SOME REMARKS ON THE MORPHOLOGY OF SMALL MAMMALS IN LAPLAND.] *Z. Säugetierk.* 36(3): 179-190, illus. 1971. [From Biol. Abstr. 52(23), 1971. In French with English and German summ.] *WR 144: 25*
[Mus. Nat. Hist. Natur., Brunoy, Switzerland.]

Tikhvinskaya, M. V., and P. K. Gorshkov. [THE TROPHIC RELATIONS OF FOXES AND *ARVICOLA TERRESTRIS* L. IN DIFFERENT LANDSCAPE REGIONS OF THE TATAR ASSR.] *Byull. Mosk. Obshchest. Ispyt. Prir. Otd. Biol.* 76(2): 33-34. 1971. [From Biol. Abstr. 52(24), 1971. In Russian with English summ.] *WR 144: 25*

Yazan, Y. P. [RELATION OF THE MARTEN *(MARTES MARTES)*, SABLE *(MARTES ZIBELLINA)*, AND KIDAS *(M. MARTES* x *M. ZIBELLINA)* WITH THE SQUIRREL *(SCIURUS VULGARIS)* AS A PREY.] *Trans. IX Int. Congr. Game Biol.* p. 530-538, 2 figs. 1970. In Russian with English summ. *WR 144: 25*

MAMMALS--TECHNIQUES

Asahi, Minoru, and Chizuko Kikukawa. [PRELIMINARY EXPERIMENTS FOR THE UTILITY OF FLUORESCEIN-NATRIUM AS A TRACER OF URINATION SITE.] *J. Mammal. Soc. Japan* 5 (1): 19-22. June 1970. [From J. Mammal. 52(3, suppl.), 1971. In Japanese with English summ.] *WR 144: 25*

Bailey, Theodore N. IMMOBILIZATION OF BOBCATS, COYOTES, AND BADGERS WITH PENCYCLIDINE HYDROCHLORIDE. *J. Wildl. Mgmt.* 35(4): 847-849, 2 figs. Oct. 1971. *WR 144: 25*
[Idaho Coop. Wildl. Res. Unit, Moscow.] Abstract: Bobcats *(Lynx rufus)*, coyotes *(Canis latrans)*, and badgers *(Taxidea taxus)* were immobilized with

phencyclidine hydrochloride during the initial phase of a bobcat study in southeastern Idaho. The average dosages for 39 bobcats, 8 coyotes, and 9 badgers were 1.0, 0.9, and 1.0 mg/lb, respectively. Most animals became manageable within 10 minutes and remained immobilized long enough for the collection of physical data, for tagging, and for fitting with radio transmitters. Badgers, because of their rapid defensive movements and thick, loose skin, were more difficult to immobilize than bobcats or coyotes. A dosage of 1.0 mg/lb is recommended for these species under field conditions.

Carley, Curtis J., and Frederick F. Knowlton. TRAPPING WOOD RATS: EFFECTIVENESS OF SEVERAL TECHNIQUES AND DIFFERENTIAL CATCH BY SEX AND AGE. *Tex. J. Sci.* 22(2-3): 248-251. Apr. 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 26*

Frison, George C., and Charles A. Reher. AGE DETERMINATION OF BUFFALO BY TEETH ERUPTION AND WEAR. *Plains Anthropol.* 50(2): 46-50. Nov. 1970. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 26*

Glue, David E. AVIAN PREDATOR PELLET ANALYSIS AND THE MAMMALOGIST. *Mammal. Rev.* (London) 1(3): 53-62. Aug. 1970. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 26*

Morhardt, J. Emil, and Sylvia S. Morhardt. FIELD MEASUREMENTS OF MAMMALIAN METABOLIC RATES USING RADIOTELEMETRY OF HEART RATES. *Amer. Zool.* 9(4): 1093. Nov. 1969. [From J. Mammal. 52(3, suppl.), 1971. Abstract only.] *WR 144: 26*

Zejda, Jan, and Věra Holišová. ON THE PREBAITING OF SMALL MAMMALS IN THE ESTIMATION OF THEIR ABUNDANCE. *Zool. Listy* (Prague) 19(2): 103-118. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 26*

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MAMMALS--FAUNAS & MANUALS

Arai, Kazumasa. [ON SMALL MAMMALS COLLECTED IN THE HIROGAWARA-GOYA, AKAISHI ALPINE RANGE.] *J. Mammal. Soc. Japan* 5(2): 82. Dec. 1970. [From J. Mammal. 52(3, suppl.), 1971. In Japanese.] *WR 144: 26*

Armstrong, David M., and J. Knox Jones, Jr. MAMMALS FROM THE MEXICAN STATE OF SINALOA. I. MARSUPIALIA, INSECTIVORA, EDENTATA, LAGOMORPHA. *J. Mammal.* 52 (4): 747-757, 6 figs. Nov. 1971. *WR 144: 26*
[Univ. Colo., Boulder.] Abstract: Two marsupials, one insectivore, one edentate, and four lagomorphs are native to Sinaloa, México. Accounts for these eight species present data on distribution, systematics, and natural history in this biogeographically strategic area of western México.

Baccus, John T. THE MAMMALS OF BAYLOR COUNTY, TEXAS. *Tex. J. Sci.* 22(2-3): 177-185. Apr. 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 26*

Dotson, Thomas, and Michael Griffith. RECENT MAMMALS OF CABELL COUNTY, WEST VIRGINIA. *Proc. W. Va. Acad. Sci. 1969* 41: 69-74. 1 May 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 26*

Heller, J. THE SMALL MAMMALS OF THE GEULA CAVE. *Israel J. Zool.* 19(1): 1-49. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 26*

Hoffmeister, Donald F., and Floyd E. Durham. MAMMALS OF THE ARIZONA STRIP INCLUDING GRAND CANYON NATIONAL MONUMENT. *Northern Ariz. Soc. Sci. & Art, Inc.* (Flagstaff), Tech. Ser. no. 11. 44 p., 14 figs. 1971. Available through Univ. Ill. Press, Urbana. *WR 144: 26*
Description of mammals occurring in the area and their faunal relationships.

Imaizumi, Y. [LAND MAMMALS OF THE TSUSHIMA ISLANDS, JAPAN.] *Japan. Mem. Nat. Sci. Mus.* (Tokyo) 3: 159-176. Oct. 1970. [From J. Mammal. 52(3, suppl.), 1971. In Japanese with English summ.] *WR 144: 27*

Krapp, Franz. TERRESTRISCHE KLEINSAEUGETIERE VON DEN AEGADISCHEN INSELN (MAMMALIA: INSECTIVORA, RODENTIA) (PROVINZ TRAPANI, SIZILIEN). [TERRESTRIAL SMALL MAMMALS OF THE AEGADIAN ISLES (MAMMALIA: INSECTIVORA, RODENTIA) (PROVINCE OF TRAPANI, SICILY).] *Mem. Mus. Civ. Stor. Natur. Verona* 17: 331-347. 1969. [From Biol. Abstr. 52(21), 1971. In German with Italian and English summ.] *WR 144: 27*
[Zool. Forschungsinst., Mus. Alexander Koenig, Bonn, Germany.]

Orr, Robert T. MAMMALS OF NORTH AMERICA. *Doubleday & Company, Inc.* (New York). 252 p., illus., 6.25 x 8.75 in. 1971. Price $9.95. *WR 144: 27*
A nontechnical guide to the mammals of North America. Life cycles, range, markings, mating, food hunting, migration, predation, and current status of familiar and some little-known species are covered. With 124 photographs, 68 in color.

Wettstein-Westersheimb, Otto. BEMERKUNGEN UEBER EINIGE SAEUGER DES GRIECHISCHE-KLEINASIATISCHEN RAUMES. [REMARKS ON SOME MAMMALS OF THE AREA OF GREECE AND ASIA MINOR.] *Sitzungsber. Oesterr. Akad. Wiss. Math. Naturwiss. Kl.* 175(9/10[28]): 357-362, illus. 1966. [From Biol. Abstr. 52(22), 1971. In German.] *WR 144: 27*

MAMMALS--POPULATIONS, HOME RANGES, COMMUNITIES

Best, Troy L. NOTES ON THE DISTRIBUTION AND ECOLOGY OF FIVE EASTERN NEW MEXICO MAMMALS. *Southwest. Natur.* 16(2): 210-211. 15 Nov. 1971. *WR 144: 27*
[Univ. Okla., Norman.] *"Dipodomys merriami ambiguus, Castor canadensis, Vulpes velox velox, Mustela frenata,* and *Odocoileus virginiana texana."*

Bradley, W. Glen, and James E. Deacon. THE ECOLOGY OF SMALL MAMMALS AT SARATOGA SPRINGS, DEATH VALLEY NATIONAL MONUMENT, CALIFORNIA. *J. Ariz. Acad. Sci.* 6(3): 206-215. Feb. 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 27*

Marches, G. DATE PRIVIND RĂSPINDIREA SI IMPORTANTA STIINTIFICA SI PRACTICĂ A UNOR MAMIFERE DIN DOBROGEA. [DATA ON THE DISTRIBUTION AND SCIENTIFIC AND ECONOMIC SIGNIFICANCE OF SOME MAMMALS IN DOBRUJA (ROMANIA).] *Ocrotirea Natur.* 14(2): 165-180, illus. 1970. [From Biol. Abstr. 52(24), 1971. In Romanian with German summ.] *WR 144: 27*
[Inst. Igiena, Bucharest, Romania.]

Meanley, Brooke. GREAT DISMAL SWAMP MAMMALS. *Atl. Natur.* 26(1): 17-18. Spring 1971. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 27*

Pruitt, William O., Jr. TUNDRA ANIMALS: WHAT IS THEIR FUTURE? *Trans. Roy. Soc. Canada, Ser. 4* 8: 373-385. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 27*

Shtil'mark, F. R. [SOME FEATURES OF THE DISTRIBUTION AND ECOLOGY OF SMALL MAMMALS IN THE FORESTS OF THE LOWER AMUR REGION.] *Byull. Mosk. Obshchest. Ispyt. Prir. Otd. Biol.* 76(2): 76-85. 1971. [From Biol. Abstr. 52(24), 1971. In Russian with English summ.] *WR 144: 27*

Yoshida, Hiroichi. [SMALL MAMMALS OF MT. KIYOMIZU, FUKOUKA PREF. 1. ECOLOGICAL DISTRIBUTION OF THE SMALL MAMMALS.] *J. Mammal. Soc. Japan* 5(1): 8-14 + 1 pl. June 1970. [From J. Mammal. 52(3, suppl.), 1971. In Japanese with English summ.] *WR 144: 27*

Alaniya, I. I., M. T. Dzneladze, B. A. Rostigayev, and P. I. Shiranovich. [A LANDSCAPE-ECOLOGICAL ANALYSIS OF THE SMALL MAMMAL FAUNA AND THEIR FLEAS IN THE ADZHAR ASSR.] *Zool. Zh.* 50(4): 561-571, illus. 1971. [From Biol. Abstr. 52(21), 1971. In Russian with English summ.] *WR 144: 28*

Alicata, Joseph E., and D. K. Amiel. ON THE ABSENCE OF *TRICHINELLA SPIRALIS* IN MONGOOSES AND RODENTS IN JAMAICA, WEST INDIES. *J. Parasitol.* 57(4): 807. Aug. 1971. *WR 144: 28*
[Univ. Hawaii, Honolulu.]

Aliff, John Vincent. A SEARCH FOR *TRYPANOSOMA CRUZI* IN KENTUCKY OPOSSUMS. *Trans. Ky. Acad. Sci.* 31(3-4): 104. 1970. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 28*

Derrick, Paul Irven. THE CONCEPT OF "LANDSCAPE EPIDEMIOLOGY" AS IT APPLIES TO ENDOPARASITISM OF SMALL MAMMALS IN SELECTED HABITATS OF SOUTH WILLOW CANYON, BONNEVILLE BASIN, UTAH. *Ph.D. thesis, Univ. Utah.* 463 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(6), 1971.] *WR 144: 28*

Durfee, Philip T. ANIMAL RESERVOIRS OF THE HUMAN SCHISTOSOMES IN AFRICA: A REVIEW OF THE LITERATURE. *Chinese J. Microbiol.* 4(1/2): 88-96. 1971. [From Biol. Abstr. 52(24), 1971. In English with Chinese summ.] *WR 144: 28*
[U.S. Naval Med. Res. Unit no. 2, Taipei, Taiwan.]

Hansen, H.-J., and K. Borg. LEUCOSIS IN WILD-LIVING RUMINANTS. *Comp. Leukaemia Res.* Pergamon Press (Oxford & N.Y.). p. 221-225, 1 fig. 1966. *WR 144: 28*
[Nat. Vet. Inst., Stockholm, Sweden.]

Hoogstraal, Harry, Jane B. Walker, and Willi O. Neitz. NOTES ON AFRICAN *HAEMAPHYSALIS* TICKS. VII. *H. (RHIPISTOMA) HYRACOPHILA* SP. N. (IXODOIDEA: IXODIDAE), A PARASITE OF HYRAXES IN SOUTH AFRICA. *J. Parasitol.* 57(2): 417-425, 35 figs. Apr. 1971. *WR 144: 28*
[U.S. Naval Med. Res. Unit no. 3, Cairo, Egypt, UAR.]

Johnson, A. Sydney. THE ECOLOGY OF SYLVATIC RABIES IN THE SOUTHEASTERN UNITED STATES: A REVIEW. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 129-140. 1969 [1970]. *WR 144: 28*
[Univ. Ga., Athens.] Summary and conclusions: Epizootics of sylvatic rabies in the United States are most commonly supported by foxes and striped skunks. In dense fox populations the disease spreads rapidly because of the high degree of susceptibility of foxes and because of the increased movement and furious behavior of rabid foxes. Rabies is not readily transmitted from foxes to other species, probably because of lower susceptibility of other species, low rates of viral secretion by foxes, behavioral and ecological barriers, and possible differences in viral strains. Eventually, however, striped skunks become infected. Striped skunks are extremely aggressive when rabid, and the disease may or may not assume epizootic proportions. Sporadic cases occur in other more resistant and less aggressive species, but the disease rarely becomes epizootic. Epizootics in fox populations usually terminate when host density is greatly reduced. Epizootics among striped skunks do not run their course as quickly because of greater host resistance and longer duration of infections. Between epizootics rabies is perpetuated by one or more species that may vary from one area to another. Mechanisms maintaining the virus in individuals and in populations have not been satisfactorily demonstrated. Several theories supported by limited evidence have been offered including reservoiring in brown adipose tissue of bats during hibernation, latent infections and infections of long duration in carnivores, viral modification, host resistance, and acquired immunity.

Krishnaswami, A. K., S. N. Ray, and R. K. Chandrahas. SEROLOGICAL SURVEY OF SMALL MAMMALS IN THE SOUTH INDIAN PLAGUE FOCUS. *Indian J. Med. Res.* 58(10): 1407-1412. Oct. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 29*

Lewis, Robert E. A NEW GENUS AND SPECIES OF FLEA FROM THE LESSER GIANT FLYING SQUIRREL IN NEPAL (SIPHONAPTERA: CERATOPHYLLIDAE). *J. Parasitol.* 57(6): 1354-1361, 14 figs. Dec. 1971. *WR 144: 29*
[Iowa State Univ., Ames.]

Lewis, Robert E. A NEW SPECIES OF *CHAETOPSYLLA* KOHAUT, 1903, INFESTING PIKAS IN NEPAL (SIPHONAPTERA: VERMIPSYLLIDAE). *J. Parasitol.* 57(6): 1344-1348, 5 figs. Dec. 1971. *WR 144: 29*
[Iowa State Univ., Ames.]

Lukashenko, N. P., A. G. Vol'eson, V. A. Istomin, and V. Y. Chernov. TRICHINELLOSIS OF ANIMALS OF CHUKOTKA PENINSULA. *Acta Parasitol. Pol.* 19(9-18): 151-161. 1971. [From Biol. Abstr. 52(21), 1971. In English with Polish summ.] *WR 144: 29*

Petrović, Z., and S. Popović. [THE FAUNA OF ECTOPARASITES OF RED DEER *(CERVUS ELAPHUS)*, ROE DEER *(CAPREOLUS CAPREOLUS)* AND WILD BOAR *(SUS SCROFA)* IN THE GAME MANAGEMENT AREA "BELJE".] *Trans. IX Int. Congr. Game Biol.* p. 676-680, 3 figs. 1970. In Russian with English summ. *WR 144: 29*
[Operat.-Nauč. Inst. "Dr. Ilija Djuričić", Belgrade, Yugoslavia.]

Piotrowski, Feliks. LICE (PHTHIRAPTERA) OF MAMMALS IN HUNGARY. *Parasitol. Hung.* 3(3): 97-118. 1970. [From Biol. Abstr. 52(24), 1971. In English with Hungarian summ.] *WR 144: 29*
[Wyzsza Szk. Pedagog., Gdansk, Danzig, Poland.] In the years 1956-1965 and in 1969, 10 spp. of mammals (deer and rodents) were examined for infestation by ectoparasites; 16 spp. of sucking lice (Anoplura) and 3 spp. of biting lice (Mallophaga) were collected. The list of Hungarian Anoplura now contains 21 spp. Six lice new to Hungary and new host records for *Hoplopleura acanthopus* and *Polyplax serrata* are recorded.

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Powers, Roger A., and B. J. Verts. REPRODUCTION IN THE MOUNTAIN COTTONTAIL RABBIT IN OREGON. *J. Wildl. Mgmt.* 35(4): 605-613, 3 figs. Oct. 1971. *WR 144: 35*
[Oreg. State Game Comm., LaGrande.] Abstract: Reproductive tracts of 269 mountain cottontail rabbits *(Sylvilagus nuttallii)* collected in Deschutes and Jefferson counties, Oregon, between May 28, 1968, and August 28, 1969, were excised and examined. Sex ratios of specimens collected by shooting, and of embryos more than 25 mm in length, were not significantly different from 1:1. Adult males appeared to be in breeding condition in the interval January-July. Juvenile males apparently did not attain breeding condition in the year of their

birth. Adult females began to breed in late February and ceased to breed in early July in 1969. Most adult females probably produced four litters in 1969; some may have produced five litters. Thirty-one adult females shed an average of 5.0 ± 0.2 ova per pregnancy, of which an average of 4.6 ± 0.2 were implanted, and an average of 4.3 ± 0.1 were viable embryos at the time of collection. Only 1 of 15 juveniles collected during the breeding season was pregnant. Productivity of the population of mountain cottontails in central Oregon was considerably less than that reported for eastern cottontails *(Sylvilagus floridanus)* in Missouri or Oregon but apparently was considerably greater than heretofore thought possible for the species.

Regnery, David C. THE EPIDEMIC POTENTIAL OF BRAZILIAN MYXOMA VIRUS (LAUSANNE STRAIN) FOR THREE SPECIES OF NORTH AMERICAN COTTONTAILS. *Amer. J. Epidemiol.* 94(5): 514-519. Nov. 1971. *WR 144: 38*

[Stanford Univ., Stanford, Calif.] Three species of North American cottontails *(Sylvilagus audubonii, S. floridanus,* and *S. nuttallii)* developed prominent tumors after being infected with Brazilian (Lausanne strain) myxoma virus. On the basis of the results of these experiments it seems possible that Brazilian myxoma virus could become established in some *S. audubonii* or *S. nuttallii* populations. The virus could reduce the population density of *S. nuttallii.*--From abstr.

Regnery, David C., and Ian D. Marshall. STUDIES IN THE EPIDEMIOLOGY OF MYXOMATOSIS IN CALIFORNIA. IV. THE SUSCEPTIBILITY OF SIX LEPORID SPECIES TO CALIFORNIAN MYXOMA VIRUS AND THE RELATIVE INFECTIVITY OF THEIR TUMORS FOR MOSQUITOES. *Amer. J. Epidemiol.* 94(5): 508-513. Nov. 1971. *WR 144: 38*

[Stanford Univ., Stanford, Calif.] Abstract: Tumors developed in each of four species of North American rabbits *(Sylvilagus audubonii, S. floridanus, S. idahoensis,* and *S. nuttallii)* following mosquito transfers of Californian myxoma virus but attempts to transfer virus via mosquitoes from the four were unsuccessful. Assays of the virus titer in the tumor tissues of *S. audubonii, S. floridanus,* and *S. nuttallii* indicated that infectious virus was present in the tissues in amounts below that usually required for effective mosquito transfer. The South American rabbit *(S. brasiliensis)* gave a negative response to Californian myxoma virus but was later infected with South American (Lausanne strain) myxoma virus. No tumors were produced in jack rabbits *(Lepus californicus)* after being inoculated with myxoma virus. Later one individual tested developed infectious tumors when it was infected with European hare fibroma. It is postulated that the brush rabbit *(S. bachmani)* is the only Leporid among those tested that can serve as a reservoir for Californian myxoma virus.

Tachibana, T., T. Kamikawa, K. Jyogo, and Y. Yamamura. [DIURNAL ACTIVITY OF *LEPUS BRACHYURUS BRACHYURUS*, UNDER SEMI-NATURAL CONDITIONS.] *J. Mammal. Soc. Japan* 5(2): 50-57. Dec. 1970. [From J. Mammal. 52(3, suppl.), 1971. In Japanese with English summ.] *WR 144: 38*

Trethewey, Donald E. C., and B. J. Verts. REPRODUCTION IN EASTERN COTTONTAIL RABBITS IN WESTERN OREGON. *Amer. Midland Natur.* 86(2): 463-476, 6 figs. Oct. 1971. *WR 144: 38*

[Dep. Natur. Resour., Fredericton, New Brunswick, Canada.] *"Sylvilagus floridanus."*

Ward, C. Patricia. GESTATION PERIODS AND BODY WEIGHTS OF WILD RABBITS *(ORYCTOLAGUS CUNICULUS)* IN CAPTIVITY. *New Zealand J. Sci.* 14(1): 10-17. Mar. 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 38*

RODENTS--MISCELLANEOUS

Al-Khateeb, Amal, and Elizabeth Johnson. SEASONAL CHANGES OF PELAGE IN THE VOLE *(MICROTUS AGRESTIS). Gen. Comp. Endocrinol.* 16(2): 217-240. Apr. 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 38*

Anderson, Sydney, and John P. Hubbard. NOTES ON GEOGRAPHIC VARIATION OF *MICROTUS PENNSYLVANICUS* (MAMMALIA, RODENTIA) IN NEW MEXICO AND CHIHUAHUA. *Amer. Mus. Novitates* 2460: 1-8. 21 Apr. 1971. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 37*

Aristova, V. A. [THE TERRITORIALISM OF THE RED VOLE IN THE FORESTS OF THE SOUTHERN PART OF THE KIROV REGION.] *Fauna Ecol. Rodents* (Moscow) 9: 151-159. 1970. [From J. Mammal. 52(4, suppl.), 1971. In Russian with English summ.] *WR 144: 37*

Ash, Lawrence R. PREFERENTIAL SUSCEPTIBILITY OF MALE JIRDS *(MERIONES UNGUICULATUS)* TO INFECTION WITH *BRUGIA PAHANGI*. *J. Parasitol.* 57(4): 777-780. Aug. 1971. *WR 144: 37*
[Univ. Calif., Los Angeles.] Male jirds *(Meriones unguiculatus)* are more susceptible to infection with lymphatic-dwelling filarial worms than are females. --From abstr.

Ash, Lawrence R., and John F. Schacher. EARLY LIFE CYCLE AND LARVAL MORPHOGENESIS OF *WUCHERERIA BANCROFTI* IN THE JIRD, *MERIONES UNGUICULATUS*. *J. Parasitol.* 57(5): 1043-1051, 22 figs. Oct. 1971. *WR 144: 37*
[Univ. Calif., Los Angeles.]

Babaev, H., and K. Nurberdyev. [MAPPING OF THE POPULATION OF THE GREAT GERBIL IN THE WESTERN SECTION OF THE CENTRAL KARA-KUMOV.] *Izvest. Akad. Nauk Turkm. SSR, Ser. Biol. Nauk* 2: 68-74. 1969. [From J. Mammal. 52(3, suppl.), 1971. In Russian.] *WR 144: 37*

Baker, Rollin H. NUTRITIONAL STRATEGIES OF MYOMORPH RODENTS IN NORTH AMERICAN GRASSLANDS. *J. Mammal.* 52(4): 800-805. Nov. 1971. *WR 144: 37*
[Mich. State Univ., East Lansing.] Abstract: Grass-eating and seed-eating myomorphs associate in temperate North American grassland environments. These two groups have distinctive nutritional specializations as expressed by different morphological, physiological, and behavioral characteristics. There seems to be opportunity for many more species of seed-eaters than grass-eaters to occupy a single grassland community, at least in the American area discussed herein.

Barnard, William P., John V. Ernst, and Robert O. Stevens. *EIMERIA PALUSTRIS* SP. N. AND *ISOSPORA HAMMONDI* SP. N. (COCCIDIA: EIMERIIDAE) FROM THE MARSH RICE RAT, *ORYZOMYS PALUSTRIS* (HARLAN). *J. Parasitol.* 57(6): 1293-1296, 2 figs. Dec. 1971. *WR 144: 37*
[Ernst: Regional Parasite Res. Lab., Auburn, Ala.]

Berry, R. J. COVERT AND OVERT VARIATION AS EXEMPLIFIED BY BRITISH MOUSE POPULATIONS. *Zool. Soc. London Symp.* 26: 3-26. 1970. [From J. Mammal. 53(1, suppl.), 1972.] *WR 144: 37*

Bovet, Jacques. INITIAL ORIENTATION OF DEER MICE *(PEROMYSCUS MANICULATUS)* RELEASED ON SNOW IN HOMING EXPERIMENTS. *Z. Tierpsychol.* 28(2): 211-216, illus. 1971. [From Biol. Abstr. 52(20), 1971. In English with German summ.] *WR 144: 37*
[Univ. Calgary, Calgary, Alberta, Canada.]

Brander, Robert B. LONGEVITY OF WILD PORCUPINES. *J. Mammal.* 52(4): 835. Nov. 1971. *WR 144: 37*
[North Central Exp. Sta., St. Paul, Minn.] Recapture record of female "at least 130 months (10.1 years) old."

Clough, Garrett C., and George Fulk. CURRENT STATUS OF THE BLOCK ISLAND MEADOW VOLE, RHODE ISLAND. *Biol. Conserv.* 3: 151-152. Jan. 1971. *WR 144: 37*
[Univ. R.I., Kingston.] *"Microtus pennsylvanicus provectus."*

Colvin, Dallas V., and Margaret Ann Colvin. AGNOSTIC BEHAVIOR OF *MICROTUS* MALES UNDER CONTROLLED AND NATURAL CONDITIONS. *J. Colo.-Wyo. Acad. Sci.* 7(1): 46. Oct. 1970. [From J. Mammal. 52(4, suppl.), 1971. Abstract only.] *WR 144: 38*

Corke, David. THE LOCAL DISTRIBUTION OF THE YELLOW-NECKED MOUSE *(APODEMUS FLAVICOLLIS). Mammal. Rev.* (London) 1(3): 62-66. Aug. 1970. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 38*

Dewsbury, Donald A. COPULATORY BEHAVIOR OF *PEROMYSCUS POLIONOTUS. Amer. Zool.* 9(4): 1066. Nov. 1969. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 38*

Dobrokhotov, B. P., Y. V. Kovalevsky, V. I. Zhukov, and L. P. Mosolov. [THE NUMERICAL ABUNDANCE OF SMALL RODENTS IN THE AUTUMN 1969; PROGNOSIS FOR 1970 OF THEIR EPIZOOTIC STATUS AS VECTORS OF TULAREMIA IN THE RSFSR.] *Bull. Otdel. Biol., Prirody* (Moscow) 75(6): 46-55. 1970. [From J. Mammal. 52(3, suppl.), 1971. In Russian.] *WR 144: 38*

Doucet, G. J., and J. R. Bider. AN UNUSUAL SURGE IN THE ACTIVITY OF *PEROMYSCUS MANICULATUS* AFTER AN EARTHQUAKE. *Canadian J. Zool.* 48(6): 1448-1450. Nov. 1970. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 38*

Drożdż, Andrzej, Andrzej Górecki, Władysław Grodziński, and Jaroslav Pelikán. BIOENERGETICS OF WATER VOLES *(ARVICOLA TERRESTRIS* L.*)* FROM SOUTHERN MORAVIA. *Ann. Zool. Fenn.* 8(1): 97-103. 1971. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 38*

Dróżdż, J., and J. M. Doby. [*ANGIOSTRONGYLUS DUJARDINI* SP. N. (NEMATODA: METASTRONGYLOIDEA) PARASITE OF *APODEMUS SYLVATICUS* AND *CLETHRIONOMYS GLAREOLUS.*] *Bull. Soc. Zool. France* 95(4): 659-668. 1970. [From J. Mammal. 52(4, suppl.), 1971. In French with English summ.] *WR 144: 38*

Dubrovskii, Y. A., and V. V. Kucheruk. [SPATIAL STRUCTURE OF THE RANGE OF *RHOMBOMYS OPIMUS* IN MIDDLE ASIA AND KAZAKHSTAN.] *Zool. Zh.* 50(2): 259-273. 1971. [From Biol. Abstr. 52(20), 1971. In Russian with English summ.] *WR 144: 38*
[Inst. Epidemiol. Microbiol., Acad. Med. Sci. USSR, Moscow, USSR.]

Fisler, George F. AGE STRUCTURE AND SEX RATIO IN POPULATIONS OF *REITHRODONTOMYS. J. Mammal.* 52(4): 653-662. Nov. 1971. *WR 144: 38*
[San Fernando State Coll., Northridge, Calif.] Abstract: Age structure of populations of *Reithrodontomys megalotis longicaudus, Reithrodontomys raviventris raviventris,* and *Reithrodontomys raviventris halicoetes* was investigated through analysis of skulls aged by tooth wear. Age structure is similar among the three taxa. Age classes are not clearly delimited. There is no mass die-off of older adults during a specific period of the year. A long breeding period provides for recruitment into the population over an extended period of time. Sex ratios greatly favor males except in the youngest and oldest of the six age classes recognized. Selection for more males may be advantageous in small mammal populations with organizational types such as are found in these *Reithrodontomys.*

Flake, Lester Dennis. AN ECOLOGICAL STUDY OF RODENTS IN A SHORT-GRASS PRAIRIE OF NORTHEASTERN COLORADO. *Ph.D. thesis, Wash. State Univ.* 116 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(5), 1971.] *WR 144: 38*
Four rodent species *(Dipodomys ordii, Onychomys leucogaster, Peromyscus maniculatus,* and *Spermophilus tridecemlineatus)* were studied on the short-grass prairie of northeastern Colo. during 1969 and 1970. Three half-section pastures subject to long-term cattle grazing at light, moderate, and heavy intensities, were live trapped to determine effects of grazing on rodent populations. Traps within each pasture were stratified into three main soil types. Rodents were snap trapped in areas adjacent to the pastures. Habitat relations, reproduction, and food habits are emphasized in the study.

Flint, V. E. [MATERIALS TO THE ECOLOGY OF THE MONGOLIAN FIVE-TOED GERBOA.] *Fauna Ecol. Rodents* (Moscow) 9: 213-217. 1970. [From J. Mammal. 52(4, suppl.), 1971. In Russian with English summ.] *WR 144: 39*

Forrester, Donald J. *HELIGMOSOMOIDES POLYGYRUS* (=*NEMATOSPIROIDES DUBIUS*) FROM WILD RODENTS OF NORTHERN CALIFORNIA: NATURAL INFECTIONS, HOST SPECIFICITY, AND STRAIN CHARACTERISTICS. *J. Parasitol.* 57(3): 498-503. June 1971. *WR 144: 39*
[Univ. Calif., Davis.] Information on the incidence and intensity of natural infections and infectivity tests of *H. polygyrus* in some wild rodents of northern California. The morphology, host specificity, and pathogenicity of a strain of *H. polygyrus*, isolated in 1966 from a wild-trapped *Mus musculus*, is compared with a strain isolated from *Peromyscus maniculatus gambeli* in 1950 and maintained in laboratory mice for 16 years.

Gerasimov, Sv. [AGE AND CHARACTERISTIC FEATURES IN THE VARIABILITY AND GROWTH OF SKULL SIGNS IN *CLETHRIONOMYS GLAREOLUS* SCHREBER, 1780 FROM THE WESTERN BALKAN MOUNTAINS.] *Bull. Inst. Zool. Mus.* (Sofia) 29: 83-118. 1969. [From J. Mammal. 52(3, suppl.), 1971. In Russian with English summ.] *WR 144: 39*

Gergilevich, N. M., and V. K. Smirnov. [SEASONAL VARIATIONS OF HAIR COVERING OF *APODEMUS FLAVICOLLIS* MELCH. (RODENTIA, MAMMALIA).] *Doklady* (Moscow) 195(4-6): 1443-1445. 1970. [From J. Mammal. 52(3, suppl.), 1971. In Russian.] *WR 144: 39*

Hamar, M., and A. Tuta. RITMUL DE REFACERE A POPULATIEI DE *MICROTUS ARVALIS* PALL. IN URMA TRATAMENTELOR CU TOXAPHEN. [RHYTHM OF RECOVERY OF *MICROTUS ARVALIS* PALL. POPULATIONS AFTER TREATMENT WITH TOXAPHENE.] *An. Inst. Cercet. Pentru Prot. Plant.* 6: 423-431, illus. 1968. [From Biol. Abstr. 52(22), 1971. In Romanian with English summ.] *WR 144: 39*
[Inst. Cercet. Pentru Prot. Plant., Bucharest, Romania.]

Heidt, Gary A. DAILY SUMMER ACTIVITY OF THE MEADOW VOLE *MICROTUS PENNSYLVANICUS*. *Mich. Acad.* 3(4): 31-39, illus. 1971. [From Biol. Abstr. 52(24), 1971.] *WR 144: 39*
[Univ. Ark., Little Rock.]

Herrer, Aristides. *LEISHMANIA HERTIGI* SP. N., FROM THE TROPICAL PORCUPINE, *COENDOU ROTHSCHILDI* THOMAS. *J. Parasitol.* 57(3): 626-629. June 1971. *WR 144: 39*
[Gorgas Memorial Lab., Apartado 6991, Panama 5, Panama.] Abstract: A skin-inhabiting species of *Leishmania* found in Panama in the tropical porcupine, *Coendou rothschildi*, is considered new and described as *Leishmania hertigi* sp. n. *L. hertigi* is differentiated from other species of *Leishmania* found in mammals mainly by the nature and course of the infection in its natural host. It is apparently harmless to its host, in which it produces a long-lasting infection, showing a well-established host-parasite relationship. There is a complete absence of any gross skin alteration due to the infection, although the parasite frequently is found in skin over the whole body. *L. hertigi* seems to be host-specific.

Hershkovitz, Philip. A NEW RICE RAT OF THE *ORYZOMYS PALUSTRIS* GROUP (CRICETINAE, MURIDAE) FROM NORTHWESTERN COLOMBIA, WITH REMARKS ON DISTRIBUTION. *J. Mammal.* 52(4): 700-709, 4 figs. Nov. 1971. *WR 144: 39*
[Field Mus. Natur. Hist., Chicago, Ill.] *"Oryzomys gorgasi."*

Hill, James I. EFFECTS OF SOCIAL INTERACTIONS ON SPACE UTILIZATION IN TWO SPECIES OF *PEROMYSCUS*. *Amer. Zool.* 9(4): 1070. Nov. 1969. [From J. Mammal. 52 (3, suppl.), 1971. Abstract only.] *WR 144: 39*

Hill, Richard W., and Emmet T. Hooper. TEMPERATURE REGULATION IN MICE OF THE GENUS *SCOTINOMYS*. *J. Mammal.* 52(4): 806-816, 2 figs. Nov. 1971. *WR 144: 39*
[Univ. Del., Newark.]

Holišová, Věra. TROPHIC REQUIREMENTS OF THE WATER VOLE, *ARVICOLA TERRESTRIS* LINN., ON THE EDGE OF STAGNANT WATERS. *Zool. Listy* (Prague) 19(3): 221-223. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 40*

Imaizumi, Tadaaki. [OBSERVATION ON A PROCESS OF DELIVERY OF *APODEMUS ARGENTEUS*.] *J. Mammal. Soc. Japan* 5(2): 83-84. Dec. 1970. [From J. Mammal. 52(3, suppl.), 1971. In Japanese.] *WR 144: 40*

Kahmann, Herman. DER GARTENSCHLAEFER *ELIOMYS QUERCINUS OPHIUSAE* THOMAS, 1925 VON DER PITYUREN-INSEL FORMENTERA (MORPHOMETRIE). [THE GARDEN DORMOUSE *ELIOMYS QUERCINUS OPHIUSAE* THOMAS 1925 FROM THE PITYUSAE ISLAND FORMENTERA (MORPHOMETRY).] *Verceff. Zool. Staatssammlung Muenchen* 14(75-90): 76-90, illus. 1970. [From Biol. Abstr. 52(20), 1971. In German with English summ.] *WR 144: 40*
[Zool. Inst., Univ., Luisentr, Germany.]

Keith, K. THE OCCURRENCE OF A SECOND SPECIES OF NAKED-TAILED RAT, GENUS *MELOMYS*, IN NEW SOUTH WALES. *CSIRO Wildl. Res.* 15(1): 19-26. Dec. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 40*

Kilpatrick, C. William. DISTRIBUTION OF THE BRUSH MOUSE, *PEROMYSCUS BOYLII*, AND THE ENCINAL MOUSE, *PEROMYSCUS PECTORALIS*, IN NORTH-CENTRAL TEXAS. *Southwest. Natur.* 16(2): 211-213, 1 fig. 15 Nov. 1971. *WR 144: 40*
[Midwestern Univ., Wichita Falls, Tex.]

Kinsella, John M. GROWTH, DEVELOPMENT, AND INTRASPECIFIC VARIATION OF *QUINQUESERIALIS QUINQUESERIALIS* (TREMATODA: NOTOCOTYLIDAE) IN RODENT HOSTS. *J. Parasitol.* 57(1): 62-70, 4 figs. Feb. 1971. *WR 144: 40*
[Univ. Fla., Gainesville.]

Kinsella, John M. *ANGIOSTRONGYLUS SCHMIDTI* SP. N. (NEMATODA: METASTRONGYLOIDEA) FROM THE RICE RAT, *ORYZOMYS PALUSTRIS*, IN FLORIDA, WITH A KEY TO THE SPECIES OF *ANGIOSTRONGYLUS* KAMENSKY, 1905. *J. Parasitol.* 57(3): 494-497. June 1971. *WR 144: 40*
[Univ. Fla., Gainesville.]

Kisiel, Donald S. OCTOBER BIRTH BY *PEROMYSCUS DIFFICILIS NASUTUS* IN NORTH CENTRAL COLORADO. *Southwest. Natur.* 16(2): 213-214. 15 Nov. 1971. *WR 144: 40*
[Colo. State Univ., Fort Collins.]

Koshkina, T. V. [ON POPULATION DYNAMICS OF THE LEMMING.] *Fauna Ecol. Rodents* (Moscow) 9: 11-61. 1970. [From J. Mammal. 52(4, suppl.), 1971. In Russian with English summ.] *WR 144: 40*

Lawlor, Timothy E. DISTRIBUTION AND RELATIONSHIPS OF SIX SPECIES OF *PEROMYSCUS* IN BAJA CALIFORNIA AND SONORA, MEXICO. *Univ. Mich. Occas. Pap. Mus. Zool.* 661: 1-22. 1 Mar. 1971. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 40*

Lidicker, William Z., Jr. CORRECTIONS AND ADDITIONS TO OUR KNOWLEDGE OF THE POCKET GOPHER *THOMOMYS MAZAMA PUGETENSIS*. *Murrelet* 52(1): 12-13. Jan.-Apr. 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 40*

Mainardi, D., M. Mainardi, A. Pasquali, and C. F. Zadra. ADOPTION OF MICE BY GOLDEN HAMSTERS. *Soc. Italiani Sci. Natur.* 110(2): 150-154. 1970. [From J. Mammal. 52(3, suppl.), 1971. In English with Italian summ.] *WR 144: 40*

Martin, Paul. MOVEMENTS AND ACTIVITIES OF THE MOUNTAIN BEAVER *(APLODONTIA RUFA)*. *J. Mammal.* 52(4): 717-723, 3 figs. Nov. 1971. *WR 144: 40*
[Wendell E. Dodge: Bur. Sport Fisheries & Wildl., Olympia, Wash.] Abstract: In western Washington, the movements of 16 adult and 11 subadult mountain beaver, fitted with miniature collar-type transmitters, were recorded by using a radio-tracking system. During radio-tracking periods of 3 to 19 months, 447 adult

animal locations were obtained and used in home range calculations. Average home range size was 0.3 acre. Maximum recorded movement from a nest site was 160 feet. Approximately 90% of all locations occurred within 80 feet of nest sites. The animals used these sites for long periods. Nest construction, foraging activities, and nest sites are described. Extensive intermittent linear movements in burrows and on the ground surface appeared to be typical of dispersing subadults prior to nest establishment.

Martin, Robert Lawrence. THE NATURAL HISTORY AND TAXONOMY OF THE ROCK VOLE, *MICROTUS CHROTORRHINUS*. *Ph.D. thesis, Univ. Conn.* 164 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(5), 1971.] *WR 144: 41*

Martirosyan, V. A. [THE SNOW VOLE AS A LIFE FORM.] *Fauna Ecol. Rodents* (Moscow) 9: 240-246. 1970. [From J. Mammal. 52(4, suppl.), 1971. In Russian with English summ.] *WR 144: 41*

Martynova, E. F., E. F. Sosnina, S. O. Visotzkaya, L. Kh. Atanosov, and G. N. Markov. [SPRINGTAILS (COLLEMBOLA) FROM NESTS OF RODENTS IN SOME REGIONS OF BULGARIA.] *Rev. Entomol. URSS* (Leningrad) 50(1): 51-62. 1971. [From J. Mammal. 52(4, suppl.), 1971. In Russian with English summ.] *WR 144: 41*

McKeever, Sturgis. *ZONORCHIS KOMAREKI* (McINTOSH, 1939) (TREMATODA: DICROCOELIIDAE) FROM *REITHRODONTOMYS HUMULIS* (AUDUBON AND BACHMAN). *J. Parasitol.* 57(4): 865. Aug. 1971. *WR 144: 41*
[Ga. Southern Coll., Statesboro.]

McManus, John J. EARLY POSTNATAL GROWTH AND THE DEVELOPMENT OF TEMPERATURE REGULATION IN THE MONGOLIAN GERBIL, *MERIONES UNGUICULATUS*. *J. Mammal.* 52(4): 782-792, 4 figs. Nov. 1971. *WR 144: 41*
[Fairleigh Dickinson Univ., Madison, N.J.]

McPherson, Alvadus Bradley. AN ANALYSIS OF FACTORS INFLUENCING THE DISTRIBUTION OF COSTA RICAN RODENTS. *Ph.D. thesis, Southern Ill. Univ.* 292 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(9), 1972.] *WR 144: 41*

Meserve, Peter L. POPULATION ECOLOGY OF THE PRAIRIE VOLE, *MICROTUS OCHROGASTER*, IN THE WESTERN MIXED PRAIRIE OF NEBRASKA. *Amer. Midland Natur.* 86(2): 417-433, 1 fig. Oct. 1971. *WR 144: 41*
[Univ. Calif., Irvine.]

Metzgar, Lee H. BEHAVIORAL POPULATION REGULATION IN THE WOODMOUSE, *PEROMYSCUS LEUCOPUS*. *Amer. Midland Natur.* 86(2): 434-448, 2 figs. Oct. 1971. *WR 144: 41*
[Univ. Mont., Missoula.]

Mizuno, Takeo. [NEW RECORD OF *MICROMYS MINUTUS NONDONIS* FROM GIFU PREF.] *J. Mammal. Soc. Japan* 5(2): 49. Dec. 1970. [From J. Mammal. 52(3, suppl.), 1971. In Japanese.] *WR 144: 41*

Morel, J., and A. Meylan. UNE PULLULATION DE CAMPAGNOLS TERRESTRES (*ARVICOLA TERRESTRIS* (L.)) (MAMMALIA: RODENTIA). [AN OUTBREAK OF FIELD VOLES (*ARVICOLA TERRESTRIS* (L.)) (MAMMALIA: RODENTIA).] *Rev. Suisse Zool.* 77(4): 705-712. 1970. [From Biol. Abstr. 52(19), 1971. In French with German and English summ.] *WR 144: 41*
[Sta. Fed. Rech. Agron., Nyon, France.]

Myers, Judith H., and Charles J. Krebs. SEX RATIOS IN OPEN AND ENCLOSED VOLE POPULATIONS: DEMOGRAPHIC IMPLICATIONS. *Amer. Natur.* 105: 325-344. 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 41*

Myton, Becky Ann Thatcher. UTILIZATION OF SPACE IN SMALL MAMMALS WITH SPECIAL REFERENCE TO *PEROMYSCUS LEUCOPUS*. *Ph.D. thesis, Univ. Md.* 104 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(4), 1971.] *WR 144: 42*

The utilization of the home range of small mammals was investigated statistically. Two studies, designed to test some existing hypotheses about home ranges and their spatial arrangement, were conducted.

Naumov, N. P., P. P. Dmitriev, and V. S. Lobachev. [CHANGES IN BIOCOENOSES OF ARAL KARAKUMY FOLLOWING THE CONTROL OF GREAT GERBILS.] *Zool. Zh.* 49(12): 1758-1766, illus. 1970. [From Biol. Abstr. 52(20), 1971. In Russian with English summ.] *WR 144: 42*

[Moscow State Univ., Moscow, USSR.] The control of great gerbils *(Rhombomys opimus* Pall.*)* by grain with zinc phosphide in the northern desert greatly influenced the biogeocoenosis. In the treated regions, gerbils, mice and voles were almost completely exterminated; jerboas and hamsters died in large colonies; insectivorous animals and reptiles died in less amounts and carnivorous mammals and birds died insignificantly. A sharp decrease in numbers of these animals was followed by significant changes in the biogeocoenosis. As a result of disruption of trophic relations after the control program, the numbers of almost all species of vertebrates in the desert decreased even to a greater extent than that of the gerbils. The progressive development of vegetation after the disappearance of hosts provided favorable conditions for increase in numbers of phytophagous animals.

Nikitina, N. A. [ON PERMANENCY IN THE USE OF TERRITORIES BY RODENTS.] *Fauna Ecol. Rodents* (Moscow) 9: 110-133. 1970. [From J. Mammal. 52(4, suppl.), 1971. In Russian with English summ.] *WR 144: 42*

Nutting, William B., Stephen O. Emejuaiwe, and Merrill O. Tisdel. *DEMODEX GAPPERI* SP. N. (ACARI: DEMODICIDAE) FROM THE RED-BACKED VOLE, *CLETHRIONOMYS GAPPERI*. *J. Parasitol.* 57(3): 660-665. June 1971. *WR 144: 42*

[Univ. Mass., Amherst.] A new species, *Demodex gapperi*, is described with notes on its biology and host relations.--From abstr.

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Ōgushi, Kōji, and Iwao Tokumitsu. [STUDIES ON RODENTICIDES (III). FEEDING PREFERENCE OF NORWAY RATS FOR WARFARIN BAITS AND LETHAL EFFECTS OF THE BAITS.] *Japanese J. Sanit. Zool.* 21(4): 219-222. 31 Dec. 1970. [From J. Mammal. 52(4, suppl.), 1971. In Japanese with English summ.] *WR 144: 42*

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Studies were conducted in an ecologically isolated field in Jefferson County, Kentucky, to determine the distributional patterns, movements, densities, and population dynamics of the small mammals of an old field community. Precise life history information was obtained, from both field and laboratory studies, for *Microtus ochrogaster* and *Reithrodontomys humulis*. Data pertaining to population structure, reproduction, growth, survival, and activity are presented.

Robel, Detlef. ZUR VARIABILITAET DER MOLARENWURZELN DES OBERKIERFERS BEI INSELPOPULATIONEN DER WALDMAUS *(APODEMUS SYLVATICUS* [L.], 1758*)*. [ON THE VARIABILITY OF THE MOLAR-ROOTS OF UPPER TEETH IN ISLAND-POPULATIONS OF THE LONGTAILED FIELD-MOUSE *(APODEMUS SILVATICUS* [L.], 1758*)*.] *Z. Saugetierk.* 36(3): 172-179, illus. 1971. [From Biol. Abstr. 52(23), 1971. In German with English summ.] *WR 144: 43*
[Thaelmannstrasse 23, Cottbus, Germany.]

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[Donetsk State Univ., Donetsk, USSR.]

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Turaev, A. K. [DISTRIBUTION AND ECOLOGY OF THE PORCUPINE *HYSTRIX LEUCURA* IN AREAS SOUTH OF TADZHIKISTAN.] *Zool. Zh.* 50(4): 605-607. 1971. [From Biol. Abstr. 52(21), 1971. In Russian with English summ.] *WR 144: 43*
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Vilchez, C. A., and J. M. Echave Llanos. CIRCADIAN RHYTHM IN THE FEEDING ACTIVITY OF *OXYMYCTERUS RUTILANS*. ROLE PLAYED BY LIGHT AND FOOD AVAILABILITY. *J. Interdisciplinary Cycle Res.* (Amsterdam) 2(1): 73-77. Mar. 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 43*

Weir, Barbara J. A TRAPPING TECHNIQUE FOR TUCO-TUCOS, *CTENOMYS TALARUM*. *J. Mammal.* 52(4): 836-839, 3 figs. Nov. 1971. *WR 144: 43*
[Wellcome Inst. Comp. Physiol., London, England.]

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Wood, Albert E., and Bryan Patterson. RELATIONSHIPS AMONG HYSTRICOGNATHOUS AND HYSTRICOMORPHOUS RODENTS. *Mammalia* 34(4): 628-639. Dec. 1970. [From J. Mammal. 52(3, suppl.), 1971. In English with French summ.] *WR 144: 44*

Young, A. S., and F. E. G. Cox. THE EFFECT OF BETAMETHASONE ON *BABESIA MICROTI* AND *B. RODHAINI* INFECTIONS IN RODENTS. *Parasitology* 63(3): 447-454, 4 figs. Dec. 1971. *WR 144: 44*
[Univ. London King's Coll., London, England.] *"Apodemus sylvaticus* and *Clethrionomys glareolus."*

Zolotukhina, S. I., and V. P. Andybova. [FODDER EFFECT ON THE CONTENT OF VITAMINS A AND E IN *MICROTUS ARVALIS* PALL.] *Dopov. Akad. Nauk Ukr. RSR* 32(3): 272-274. 1970. [From Biol. Abstr. 52(24), 1971. In Russian with English summ.] *WR 144: 44*
[Inst. Zool., Acad. Sci. Ukr. SSR, Kiev, USSR.]

RATTUS & MUS

Andrews, R. V., R. W. Belknap, J. Southard, S. Hess, and R. Strohbehn. CAPTURE AND HANDLING OF WILD NORWAY RATS USED FOR ENDOCRINE STUDIES. *J. Mammal.* 52(4): 820-824. Nov. 1971. *WR 144: 44*
[Creighton Univ., Omaha, Nebr.]

Bowerman, Alan M., and Joe E. Brooks. EVALUATION OF U-5897 AS A MALE CHEMOSTERILANT FOR RAT CONTROL. *J. Wildl. Mgmt.* 35(4): 619-624, 1 fig. Oct. 1971. *WR 144: 44*
[Bur. Rodent Control, N.Y. State Dep. Health, Troy.] Abstract: Laboratory studies conducted with U-5897 (3-chloro-1,2-propanediol) in individually caged and penned colonies of wild Norway rats *(Rattus norvegicus)* demonstrated that an effective sterilizing dose of 175 mg/kg of body weight was voluntarily consumed by 70 to 80% of the test males. Two similar rat-infested dumps, one serving as a control and the other as the treated site, were utilized for a field trial of U-5897 during the late summer-early fall breeding peak. After several nights of prebaiting the test site with plain bait, rats consumed 3,255 grams of the one percent U-5897 bait on the 1 night of exposure. A second application of U-5897 bait was made 11 weeks after the first, and 2,630 grams of bait was consumed in 1 night. Two weeks after the first treatment, 18 of 23 mature males exhibited effects of U-5897. A maximum of 36% of the mature males trapped from the test site 4, 8, and 15-17 weeks after the first treatment were sterile. During the test period, 46 of 84 mature females captured from the treated dump were either pregnant or lactating, and 34 of 73 from the control dump were pregnant or lactating. These data indicate that pregnancies and lactation were not inhibited by the level of male sterility achieved during the field trial.

Buscher, Henry N., and A. James Haley. INTESTINAL HELMINTHS OF *RATTUS RATTUS* FROM URBAN AND RURAL AREAS IN THE PUNJAB REGION OF WEST PAKISTAN. *Proc. Helminthol. Soc. Washington* 38(1): 96-98. Jan. 1971. [From J. Mammal. 52(2, suppl.), 1971.] *WR 144: 44*

Hobbs, R. P. STUDIES OF AN ISLAND POPULATION OF *RATTUS FUSCIPES*. *Victorian Natur.* (West Melbourne) 88(2): 32-38. Feb. 1971. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 44*

Hoi Sen, Yong. RATS FROM KEDAH PEAK (GUNONG JERAI), KEDAH. *Malayan Nature J.* 22(2): 53-56. 1969. [From Biol. Abstr. 52(20), 1971.] *WR 144: 45*
[Univ. Malaya, Kuala Lumpur, Malaysia.] *Rattus muelleri* and *R. niviventer* are recorded for the first time.

Hood, Glenn A., Roger D. Nass, Gerald D. Lindsey, and David N. Hirata. DISTRIBUTION AND ACCUMULATION OF RAT DAMAGE IN HAWAIIAN SUGARCANE. *J. Wildl. Mgmt.* 35(4): 613-618, 2 figs. Oct. 1971. *WR 144: 45*
[Bur. Sport Fisheries & Wildl., Denver, Colo.] Abstract: A study of damage by rats *(Rattus* spp.*)* in a Hawaiian sugarcane field revealed that damage became appreciable when the crop was 14 months old; it then increased rapidly and peaked when the cane was 19 to 21 months old. When the cane was harvested at 22 months, rats (conservatively estimated at 30 per acre) had injured 14,000 stalks per acre or 29% of the crop. Damage was greater near the field edge than in the interior, although rats trapped at harvest were uniformly distributed in the field. The data indicate that control should be initiated in adjoining noncrop areas at the time damage begins along the field edge and later extended throughout the field when damage becomes apparent in the interior.

Navarathnam, E. Susan. INTESTINAL FLAGELLATES OF THE COMMON INDIAN RAT *RATTUS RATTUS FRUGIVOROUS*. *Acta Protozool.* (Warsaw) 8(8-18): 155-165. 1970. [From J. Mammal. 52(3, suppl.), 1971. In English with French summ.] *WR 144: 45*

Ōgushi, Kōji, and Iwao Tokumitsu. [STUDIES ON RODENTICIDES. (II) FEEDING PREFERENCE OF NORWAY RAT ON POISON BAITS WITH ACUTE RODENTICIDES AND THEIR KILLING EFFECTS.] *Japanese J. Sanit. Zool.* 21(3): 181-185. 30 Nov. 1970. [From J. Mammal. 52(3, suppl.), 1971. In Japanese with English summ.] *WR 144: 45*

Summerlin, Carl Tanner. SOCIAL INFLUENCES ON TRAP RESPONSE AND ACTIVITY OF THE COTTON RAT, *SIGMODON HISPIDUS*. *Ph.D. thesis, Miss. State Univ.* 47 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(4), 1971.] *WR 144: 45*
Male cotton rats, *Sigmodon hispidus*, were tested to determine if there was a relationship between heterogeneous trap response and social rank. Social subordination acting through these three factors (decreased exploratory activity, neophobia, and olfactory inhibition) functions to decrease both the probabilities to encountering and entering a trap.

Yong, Hoi-Sen. A MALAYAN VIEW OF *RATTUS EDWARDSI* AND *R. SABANUS* (RODENTIA: MURIDAE). *Zool. J. Linnean Soc.* 49(4): 359-370. Nov. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 45*

SCIURIDS

Christisen, Donald M. IMPORTANCE OF DAILY BAG IN SQUIRREL HUNTING. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 322-331, 4 figs. 1971. *WR 144: 45*
[Mo. Dep. Conserv., Columbia.] "Although the original intent of a bag limit was to ration, there is evidence that a limit has broader implications in the harvest of such species as fox squirrels *(Sciurus niger)* and gray squirrels *(S. carolinensis)* in Missouri. This information indicates that limiting the bag may be a two-edged management tool; it rations, but also it may encourage harvest. Bag limit can serve as a criterion, too, in measuring the success of a season."

Clark, Tim W. RICHARDSON'S GROUND SQUIRREL *(SPERMOPHILUS RICHARDSONII)* IN THE LARAMIE BASIN, WYOMING. *Great Basin Natur.* 30(2): 55-70, illus. 1970. [From Biol. Abstr. 52(20), 1971.] *WR 144: 45*
[Wis. State Univ., Medford.] Richardson's ground squirrel was studied in Laramie Basin, Wyoming (elevation 7200 ft) from Aug. 1966 to Mar. 1969.

Clarkson, David P., and Homer J. Ferguson. EFFECT OF TEMPERATURE UPON ACTIVITY IN THE RED SQUIRREL. *Amer. Zool.* 9(4): 1110. Nov. 1969. [From J. Mammal. 52(3, suppl.), 1971. Abstract only.] *WR 144: 46*

Colley, Fredrick C. *EIMERIA CALLOSCIURI* N. SP. (PROTOZOA: EIMERIIDAE) FROM PREVOST'S SQUIRREL *CALLOSCIURUS PREVOSTII* DESMAREST, 1822 IN MALAYSIA. *J. Protozool.* 18(2): 199-200, 5 figs. May 1971. *WR 144: 46*
[Univ. Calif., San Francisco.] The first species of *Eimeria* described from the rodent tribe Callosciurini.

Dobroruka, L. J. BEHAVIOUR IN THE BUSH SQUIRREL, *PARAXERUS CEPAPI* (A. SMITH, 1836). *Rev. Zool. Bot. Africaines* 82(1-2): 131-140. 30 Sept. 1970. [From J. Mammal. 52(4, suppl.), 1971. In (English) with German summ.] *WR 144: 46*

Durette-Desset, Marie-Claude. [*BREVISTRIATA BERGERARDI*, A NEW HELIGOSOME, PARASITE OF A KOREAN SQUIRREL.] *Bull. Mus. Nat. Hist. Natur.* 42(2): 419-423. 11 Dec. 1970. [From J. Mammal. 52(4, suppl.), 1971. In French with English summ.] *WR 144: 46*

Fitzgerald, James P. SYLVATIC PLAGUE IN GUNNISON'S PRAIRIE DOGS *(CYNOMYS GUNNISONI)* AND ASSOCIATED MAMMALS IN SOUTH PARK, COLORADO. *J. Colo.-Wyo. Acad. Sci.* 7(1): 45. Oct. 1970. [From J. Mammal. 52(4, suppl.), 1971. Abstract only.] *WR 144: 46*

Haberman, Clark G., and Eugene D. Fleharty. ENERGY FLOW IN *SPERMOPHILUS FRANKLINII*. *J. Mammal.* 52(4): 710-716, 2 figs. Nov. 1971. *WR 144: 46*
[Tri-County High School, De Witt, Nebr.] Abstract: The energy flow value of *Spermophilus franklinii* based on results from oxygen and food consumption experiments for an estimated one animal per hectare for 1 day was 123.8 kilocalories. This value would be nearly equivalent to the energy of maintenance as a negligible amount would be used for growth in such a brief period. Actual metabolizable energy calculated from food consumption experiments was about double the estimated resting metabolizable energy ascertained from oxygen consumption. Oxygen consumption can be expressed as $Y = 1.73-0.041\ X$ for metabolic responses to ambient temperature changes below 26.5°C. The thermoneutral zone (26.5 to 31°C) gave a value of 0.64 cubic centimeters of oxygen per gram per hour. These values were close to those predicted by relating metabolism to body weight.

Heller, H. Craig. THE PHYSIOLOGICAL AND BEHAVIORAL BASIS FOR THE ALTITUDINAL ZONATION OF FOUR SPECIES OF CHIPMUNKS, *(EUTAMIAS)*. *Amer. Zool.* 9(4): 1112. Nov. 1969. [From J. Mammal. 52(3, suppl.), 1971. Abstract only.] *WR 144: 46*

Hendricks, Helen. WOODCHUCKS IN A GRAY FOX BURROW. *Ind. Audubon Quart.* 48 (3): 118. Aug. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 46*

Lee, B. L., and R. S. Dorney. *EIMERIA ONTARIOENSIS* N. SP., *E. CONFUSA* JOSEPH, 1969 AND *EIMERIA* SP. (PROTOZOA: EIMERIIDAE) FROM THE ONTARIO GRAY SQUIRREL *SCIURUS CAROLINENSIS*. *J. Protozool.* 18(4): 587-592, 5 figs. Nov. 1971. *WR 144: 46*
[Univ. Waterloo, Waterloo, Ontario, Canada.]

Lichtenfels, J. Ralph. *CITELLINEMA GRISEI* SP. N. (NEMATODA: TRICHOSTRONGYLIDAE) FROM THE WESTERN GRAY SQUIRREL, *SCIURUS GRISEUS*. *Proc. Helminthol. Soc. Washington* 38(2): 257-261. July 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 46*

Merriam, H. Gray. WOODCHUCK BURROW DISTRIBUTION AND RELATED MOVEMENT PATTERNS. *J. Mammal.* 52(4): 732-746, 3 figs. Nov. 1971. *WR 144: 46*
[Carleton Univ., Ottawa, Ontario, Canada.] Abstract: One hundred and 12 burrow systems were defined in terms of woodchuck *(Marmota monax rufescens)* use rather than burrow structure. The spatial distribution of these burrows was

fitted by a negative binomial. Part of the clustering in this distribution resulted from preferences for steep slopes and well-drained soils. It was hypothesized that if any biological need, other than a suitable burrow site, was satisfied by the clustering, then interburrow movements would be less frequent between clusters than within clusters. Over 600 interburrow movements were recorded by tracking in snow, trapping, visual observation, and telemetry. Movements between burrows within a cluster were more frequent than movements between clusters, although no barriers were apparent between clusters except lack of burrows. Burrow clusters and social groups may coincide.

Michener, Daniel R., and Gail R. Michener. SEX RATIO AND INTERYEAR RESIDENCE IN A POPULATION OF *SPERMOPHILUS RICHARDSONII*. *J. Mammal.* 52(4): 853. Nov. 1971. *WR 144: 47*
[Univ. Saskatchewan, Regina, Saskatchewan, Canada.]

Minckley, W. L. POSSIBLE EXTIRPATION OF THE SPRUCE SQUIRREL FROM THE PINALENO (GRAHAM) MOUNTAINS, SOUTH-CENTRAL ARIZONA. *J. Ariz. Acad. Sci.* 5: 110. Oct. 1968. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 47*

Morhardt, Sylvia Staehle. ENERGY EXCHANGE PROPERTIES, PHYSIOLOGY, AND GENERAL ECOLOGY OF THE BELDING GROUND SQUIRREL. *Ph.D. thesis, Wash. Univ.* 235 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(4), 1971.] *WR 144: 47*
An analysis is made of the energy exchange between Belding ground squirrels *(Citellus beldingi beldingi)* and the microhabitats which they occupy during their annual summer period of activity. A natural population was observed, and the microclimates of six different types of microhabitats which the squirrels typically occupied are quantitatively described. Methods are derived for calculating the average radiation absorbed by a geometric model which is used to represent the squirrel at different orientations to the sun. The average absorbed radiation is plotted as a function of air temperature in climate diagrams that describe the thermal conditions occurring hourly in the microhabitats on clear, partly cloudy, and stormy days.

Morton, Martin L., and Hsing-chu Lucy Tung. THE RELATIONSHIP OF TOTAL BODY LIPID TO FAT DEPOT WEIGHT AND BODY WEIGHT IN THE BELDING GROUND SQUIRREL. *J. Mammal.* 52(4): 839-842, 2 figs. Nov. 1971. *WR 144: 47*
[Occidental Coll., Los Angeles, Calif.]

Nekrasov, E. S. [BIG MARMOT IN THE URALS FORESTS.] *Priroda* (Moscow) 2: 122-123. Feb. 1971. [From J. Mammal. 52(3, suppl.), 1971. In Russian.] *WR 144: 47*

Pack, James C., H. Reed Sanderson, and Robert W. Donohoe. COMPARISON OF GRAY SQUIRREL CENSUS TECHNIQUES. *Trans. NE Sect. Wildl. Soc., 28th NE Fish & Wildl. Conf.* p. 145-158, 4 figs. 1971. *WR 144: 47*
[W. Va. Dep. Natur. Resour., Elkins.] Abstract: Leaf nest counts, activity index, hunter success, and hunter observations were used to determine gray squirrel population trends on a 20,000 acre area in southeastern West Virginia. Data collected on a 1250 acre area showed that hunter success and population estimates by the Lincoln Index were highly correlated. The hunter success method required fewer man-days of effort to secure population trends than any other technique. Hunter success data of gray squirrel and "turkey hunters" can be combined to indicate trends in populations on the area studied. Leaf nest counts with 852-860, 2 x 8 chain plots were sufficient to statistically represent changes in numbers of leaf nests. Results from leaf nest counts were not normally distributed, and the leaf nest count contrasted with other methods used in one out of four years. Hunter observations did not differ from hunter success data and offers no advantages in using this technique. Activity index required more man-days than any other technique used, but it showed trends in gray squirrel populations similar to hunter success and hunter observations.

Parker, James Conn. PROTOZOAN, HELMINTH AND ARTHROPOD PARASITES OF THE GRAY SQUIRREL IN SOUTHWESTERN VIRGINIA. *Ph.D. thesis, Va. Polytech. Inst.* 278 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(5), 1971.] *WR 144: 48*
"Sciurus carolinensis pennsylvanicus."

Parker, James C., and Rhodes B. Holliman. NOTES ON *GONGYLONEMA PULCHRUM* MOLIN, 1857 (NEMATODA: SPIRURIDAE) IN THE GRAY SQUIRREL IN SOUTHWESTERN VIRGINIA. *J. Parasitol.* 57(3): 629. June 1971. *WR 144: 48*
[Va. Polytech. Inst., Blacksburg.]

Redington, Bryce C., and Leo A. Jachowski, Jr. SYNGAMY AND SPOROGONY OF *HEPATOZOON GRISEISCIURI* CLARK, 1958 (SPOROZOA: HAEMOGREGARINIDAE), IN ITS NATURAL VECTOR, *HAEMOGAMASUS REIDI* EWING, 1925 (ACARI: MESOSTIGMATA). *J. Parasitol.* 57 (5): 953-960, 22 figs. Oct. 1971. *WR 144: 48*
[Walter Reed Army Med. Center, Washington, D.C.] The entire sporogonic development of the gray squirrel hemogregarine, *Hepatozoon griseisciuri*, in its natural vector mite, *Haemogamasus reidi*, is described.--From abstr.

Sheppard, David H., and Sharon M. Yoshida. SOCIAL BEHAVIOR IN CAPTIVE RICHARDSON'S GROUND SQUIRRELS. *J. Mammal.* 52(4): 793-799. Nov. 1971. *WR 144: 48*
[Univ. Saskatchewan, Regina, Saskatchewan, Canada.] Abstract: Thirty-nine young *Spermophilus richardsonii* representing nine different litters were observed in pairs in a neutral arena to determine if recognition occurred between related young. Sibling pairs displayed little agonistic behavior and much cohesive behavior as compared with nonsibling pairs, indicating that recognition did occur in an unfamiliar environment. Nonsibling pairs also exhibited marked avoidance. A high frequency of contact involving the nose occurred in first encounters, suggesting that recognition is at least partly olfactory. Males showed more agonistic and less cohesive behavior than females. Implications of the findings in social organization and dispersal in this species are discussed.

Sidorowicz, J. [PROBLEMS OF THE SUBSPECIFIC TAXONOMY OF THE SQUIRREL *(SCIURUS VULGARIS)* IN THE PALAEARCTIC.] *Trans. IX Int. Congr. Game Biol.* p. 861-864. 1970. In Russian with English summ. *WR 144: 48*

Steiner, A. L. PLAY ACTIVITY OF COLUMBIAN GROUND SQUIRRELS. *Z. Tierpsychol.* 28(3): 247-261, illus. 1971. [From Biol. Abstr. 52(21), 1971. In English with German summ.] *WR 144: 48*
[Univ. Alberta, Edmonton, Alberta, Canada.] Description of play in "yearling" Columbian ground squirrels *Spermophilus columbianus columbianus* including a simplified inventory of basic behavior patterns and some of their variations.

Surdacki, Stanisław. [THE DYNAMICS OF POPULATION DENSITY OF *CITELLUS SUSLICUS* (GUELDENSTAEDT, 1770) AT SŁAWĘCIN, IN THE YEARS 1961-1966.] *An. Univ. Mariae Curie-Skłodowska Lublin-Polonia* 23(9): 223-247. 1968. [From J. Mammal. 52(3, suppl.), 1971. In Polish with English and Russian summ.] *WR 144: 48*

Surdacki, Stanisław. [A REPEATED ALARM ON THE PROTECTION OF THE SOUSLIK IN POLAND.] *Protection Natur.* (Kraków) 26(3): 11-13. 1970. [From J. Mammal. 52 (3, suppl.), 1971. In Polish with English summ.] *WR 144: 48*

Taylor, J. C. SOCIAL STRUCTURE AND BEHAVIOUR IN A GREY SQUIRREL POPULATION. *Ph.D. thesis, Univ. London.* 217 p. 1969. *WR 144: 48*
Report of a study on the *Sciurus carolinensis* population inhabiting an 11-acre woodlot in England from 1964-1969. Data obtained by frequent handling and by observing visibly marked animals. Descriptions of social interactions, communication and activity rates. Attempt made to construct a model to illustrate how bark feeding behavior may arise.

Willems, Norman James. THERMOREGULATION AND WATER REQUIREMENTS IN SEMIARID AND MONTANE POPULATIONS OF THE LEAST CHIPMUNK, *EUTAMIAS MINIMUS*. *Ph.D. thesis, Univ. Kans.* 115 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(4), 1971.] *WR 144: 49*
The thermoregulatory characteristics and water requirements between semiarid and montane populations of *Eutamias minimus* are compared.

Zimina, R. P., G. S. Pogodina, and T. F. Urushadze. [LANDSCAPE-FORMING ACTIVITY OF MARMOTS IN THE ARID HIGHLANDS OF THE TIEN-SHAN AND PAMIR.] *Fauna Ecol. Rodents* (Moscow) 9: 177-191. 1970. [From J. Mammal. 52(4, suppl.), 1971. In Russian with English summ.] *WR 144: 49*

BEAVER

Arner, D. H., J. Baker, D. Wesley, and B. Herring. AN INVENTORY AND STUDY OF BEAVER IMPOUNDED WATER IN MISSISSIPPI. *Proc. 33rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 111-128, 8 figs. 1969 [1970]. *WR 144: 49*
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[Vt. Fish & Game Dep., Roxbury.] Abstract: Vulnerability is examined as a characteristic of Vermont's black bear population. Data from 1963 to 1970 are presented and discussed. Population sex ratio is established at 56.3% male:43.7% female. Vulnerability is evaluated in relation to sex and age; hour, day, month,

and year of kill; and weather, cover type, and bear activity at the time of kill. Sex and age ratio data reveal a differential vulnerability favoring females in the population. Vulnerability is proposed to be more effective during September and October as a direct result of male bear feeding behavioral patterns. Weather conditions and bear activity at the moment of harvest show no indications of effecting vulnerability. During September and October bear appear more prone to harvest in the early morning or late afternoon hours. Morning kills during November are proposed to be a result of greater hunter participation rather than bear behavioral patterns. Cover type is determined to play a significant role in vulnerability. Male bear frequenting open areas render themselves more vulnerable to harvest.

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RACCOON, RINGTAIL, COATI

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Abstract: A field test to evaluate anticoagulant rodenticides as a method of controlling raccoon populations was carried out on the Cape Romain National Wildlife Refuge, South Carolina. Fumarin mixed with corn was dispensed at ten permanent feeding stations over a six-week period. A marked decline in the number of raccoons was noted on the study area as a result of the experiment. Feeders for the study were developed by refuge personnel and proved to be relatively bird and mouse proof, but easily accessible to raccoons. In addition to the field study, observations were made of six caged raccoons fed varying amounts of rodenticide to determine lethal dosage and the length of time required to bring death.

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DOGS, WOLVES, FOXES

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[Nesterov: Inst. Cercetari, Stud. Proiectari Silvice, Bucharest, Romania.]

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[Mus. Hist. Nat. "Grigore Antipa", Bucharest, Romania.] Data on the reproduction of the *N. procyonoides usuriensis* in the Danube Delta were obtained by field and laboratory researches, during the 1966-1968 period. Observations are related concerning the rut period, the intra-uterine development and growth of the fetus and the high fertility of this animal. The best control period by removing the cubs out of their den is also mentioned.

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[Res. Inst. Natur. Mgmt., Arnhem, Netherlands.]

Jakowski, R. M., and D. S. Wyand. LISTERIOSIS ASSOCIATED WITH CANINE DISTEMPER IN A GRAY FOX. *J. Amer. Vet. Med. Ass.* 159(5): 626-628, 3 figs. 1 Sept. 1971. *WR 144: 55*
[Univ. Conn., Storrs.] Summary: Systemic listeriosis occurred in conjunction with canine distemper in a gray fox *(Urocyon cinereoargenteus)*. Type 4a *Listeria monocytogenes* was isolated from the liver.

Jensen, B. EFFECT OF A FOX CONTROL PROGRAMME ON THE BAG OF SOME OTHER GAME SPECIES. *Trans. IX Int. Congr. Game Biol.* p. 480. 1970. In English with Russian summ. *WR 144: 55*
[Game Biol. Sta., Rønde, Denmark.]

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The history and distribution, habitat, life history, food habits, economic importance, and management of the red fox *Vulpes vulpes* is covered generally. First of a four part series.

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[Odesskii Gosudarst. Univ., Odessa, USSR.]

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"Alopex lagopus."

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[Ontario Dep. Lands & Forests, Toronto, Ontario, Canada.]

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CATS

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Cahill, J. Lloyd. PUMA. *Sierra Club Bull.* 56(3): 18-22. Mar. 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 56*

Conde, B. RONRONNEMENT ET EMPREINTE CHEZ UN FÉLIDÉ SAUVAGE. [PURRING AND DISPOSITION IN A WILD CAT.] *C. R. Seances Soc. Biol. Filiales* 164(6): 1392-1394. 1970. [From Biol. Abstr. 52(21), 1971. In French.] *WR 144: 56*
[Lab. Zool. Fac. Sci., Nancy, France.]

Conley, Richard H., and James H. Jenkins. AN EVALUATION OF SEVERAL TECHNIQUES FOR DETERMINING THE AGE OF BOBCATS *(LYNX RUFUS)* IN THE SOUTHEAST. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 104-110, 1 fig. 1969 [1970]. *WR 144: 57*

[Tenn. Game & Fish Comm., Nashville.] Abstract: A total of 57 of 75 bobcats *(Lynx rufus)* available were utilized in an evaluation for determining age in this species. Pelage characteristics, body measurements, frozen eye lens weight, and epiphyseal closure of the forelegs and humeri were of little value in determining age. Skull measurements were used in determining three age classes: (1) kittens (0-12 months); (2) young adults (13-24 months); and (3) adults (over 25 months). Skull morphology was also useful in defining these classes. The number of cementum annuli in the upper canine was correlated with age and allowed a more accurate age to be assigned to each animal than the other methods evaluated. Comparing the cementum annuli with the skull measurements indicated that the tooth sectioning technique was far better. In general, by skull examination, bobcat ages were consistently underestimated. Of 19 specimens placed in the young adult age class (13-24 months) by skull characters, 10 of these were actually over two years old as shown by cementum annuli. We saw no evidence that false annuli are formed in bobcats at least in Georgia and South Carolina.

Dobroruka, Luděk J. INDIVIDUAL VARIATION OF THE AMUR LEOPARD CAT, *PRIONAILURUS BENGALENSIS EUPTILURUS* (ELLIOT, 1871), FROM KOREA. *Vestn. Cesk. Spolecnosti Zool.* 35(1): 9-10. 1971. [From Biol. Abstr. 52(22), 1971.] *WR 144: 57*

[Zool. Gard. Prague, Prague, Czechoslovakia.]

Jorgensen, S. E., and L. David Mech, editors. PROCEEDINGS OF A SYMPOSIUM ON THE NATIVE CATS OF NORTH AMERICA / THEIR STATUS AND MANAGEMENT. *Bur. Sport Fisheries & Wildl. Region 3.* 139 p., illus. 1971. *WR 144: 57*

[Federal Bldg., Ft. Snelling, Twin Cities, Minn.] Includes the following: *Summary of the symposium on the native cats of North America*, Ian McTaggart Cowan; *General status and protection for the cats of other countries*, Harry A. Goodwin and Eley P. Denson; *The status and management of the Canada lynx in Canada*, C. G. van Zyll de Jong; *The lynx in the Northwest*, Carl H. Nellis; *Lynx management in Alaska*, Oliver Burris; *The status and management of the bobcat and Canada lynx in Wisconsin*, John M. Keener; *A report on wildcats in Saskatchewan*, H. S. Maliepaard; *The status of wildcats in New Hampshire*, Hilbert R. Siegler; *History and status of the felids of Texas*, Dennis N. Russell; *The wildcats of British Columbia*, D. J. Spalding; *The status and management of the felids of Oregon*, Paul W. Ebert; *Status and management of the mountain lion and bobcat in Colorado*, Wayne W. Sandfort and Robert J. Tully; *The status and management of the bobcat and cougar in the southeastern states*, James H. Jenkins; *The status and management of the cougar in Arizona*, Phil M. Cosper; *The status and management of the mountain lion in California*, Wallace Macgregor; *The status of the mountain lion in Nevada - 1971*, Joseph C. Greenley; *The cougar in New Brunswick*, Bruce S. Wright; *The economic value of the wildcats of North America as fur animals*, Homer S. Ford; *The legal status of the wildcats in the United States*, C. E. Faulkner; *Problems posed to the livestock industry by felids*, James L. Powell; and *Some alternative approaches for perpetuation of endangered wild felids*, Michael K. Petersen.

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Noble, Robert E. A RECENT RECORD OF THE PUMA *(FELIS CONCOLOR)* IN ARKANSAS. *Southwest. Natur.* 16(2): 209. 15 Nov. 1971. *WR 144: 57*

[Northwestern State Coll., Natchitoches, La.]

Sankhala, K. S. THE VANISHING INDIAN TIGER. *IUCN Publ., New Ser.* (Morges) 18: 34-45. 1970. [From J. Mammal. 52(3, suppl), 1971. In English with French summ.] *WR 144: 57*

Singh, Arjan. THE TIGER OF THE TERAI WITH SPECIAL REFERENCE TO THE KHERI FORESTS OF UTAR PRADESH, INDIA. *IUCN Publ., New Ser.* (Morges) 18: 55-56. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 58*

Smith, R. E., W. Boardman, and P. C. B. Turnbull. HEPATOMA IN A BENGAL TIGER. *J. Amer. Vet. Med. Ass.* 159(5): 617-619, 5 figs. 1 Sept. 1971. *WR 144: 58*
[Univ. Mass., Amherst.]

Tilden, Paul. LAST STAND OF THE ASIATIC LION. *Nat. Parks Mag.* 44(279): 14-18. Dec. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 58*

BIG GAME, GENERAL

Ayers, Kenneth M., F. M. Garner, and Lynn A. Griner. DISSEMINATED NOCARDIOSIS IN A NORTH AFRICAN ANTELOPE. *J. Amer. Vet. Med. Ass.* 159(5): 611-613, 1 fig. 1 Sept. 1971. *WR 144: 58*
[Armed Forces Inst. Path., Washington, D.C.] Summary: Disseminated nocardiosis was diagnosed histologically in a young female North African antelope. The only sign of illness was diarrhea.

Bell, B. D., and R. H. Taylor. EXPEDITION'S STUDY OF THE WILD SHEEP OF CAMPBELL ISLAND. *Forest & Bird* 178: 6-10, illus. Nov. 1970. *WR 144: 58*
[Dep. Internal Affairs, Wellington, New Zealand.] An expedition to Campbell Island to build a fence across the island, shoot feral sheep, and to make observations is reported.

Bergerud, Arthur T. THE POPULATION DYNAMICS OF NEWFOUNDLAND CARIBOU. *Wildl. Monogr.* no. 25. 55 p., 27 figs. Oct. 1971. *WR 144: 58*
[Univ. Victoria, Victoria, British Columbia, Canada.] The population dynamics of the caribou, *Rangifer tarandus terraenovae* Bangs, on the island of Newfoundland were investigated 1957-1967. Four herds were recognized and censused. Their distribution is noted and herd sizes during 1900-1967 are reported. Birth rates and adult and calf mortality are discussed. Two major mortality factors that have limited population growth are lynx predation of calves and hunting mortality of adults.

Bindernagel, J. A. *ELAEOPHORA POELI* (NEMATODA: FILARIOIDEA) IN AFRICAN BUFFALO IN UGANDA, EAST AFRICA. *J. Wildl. Dis.* 7(4): 296-298, 2 figs. Oct. 1971. *WR 144: 58*
[Univ. Guelph, Guelph, Ontario, Canada.]

Binney, George A., F. Bourlière, Kai Curry-Lindahl, J. J. Dutta, and J. J. Spillett. KANHA NATIONAL PARK, MADHYA PRADESH, WITH SPECIAL REFERENCE TO THE SWAMP DEER *CERVUS DUVAUCELI*: A REHABILITATION PROBLEM. *IUCN Publ., New Ser.* (Morges) 19: 102-107. 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 58*

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[Univ. Guelph, Guelph, Ontario, Canada.]

Bojović, D. [CLIMATIC AND OTHER FACTORS INFLUENCING THE KINETICS OF DEER HOWL.] *Trans. IX Int. Congr. Game Biol.* p. 875-884, 15 figs. 1970. In Russian with German and English summ. *WR 144: 58*

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Boyd, Raymond J. ELK OF THE WHITE RIVER PLATEAU, COLORADO. *Colo. Div. Game Fish Parks, Tech. Publ.* 25: 1-126. Aug. 1970. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 58*

Briedermann, L. DIE ROLLE DES SCHWARZWILDES *(SUS SCROFA L.)* BEI DER STEIGERUNG DER JAGDWIRTSCHAFTLICHEN PRODUKTIVITÄT. [THE ROLE OF *SUS SCROFA* IN THE INCREASE OF WILDLIFE PRODUCTIVITY THROUGH MANAGEMENT.] *Trans. IX Int. Congr. Game Biol.* p. 807-811. 1970. In German with Russian summ. *WR 144: 59*
[Inst. Forstwissenschaften Eberswalde, Eberswalde, Germany.]

Brna, J., V. Munkačević, and D. Nikolandić. [REGULATING THE NUMBER AND STRUCTURE OF RED DEER POPULATION IN BELJE FORESTS IN YUGOSLAVIA.] *Trans. IX Int. Congr. Game Biol.* p. 146-150, 4 figs. 1970. In Russian with English summ. *WR 144: 59*
[Operat.-Nauch. Inst. "Dr. Ilija Djuričić", Belgrade, Yugoslavia.]

Bwangamoi, Okot. *GAZALLOSTRONGYLUS (PARACOOPERIA) LEROUXI*, THE CAUSE OF LARGE NODULES IN THE ABOMASUM OF GAZELLES IN KENYA. *Bull. Epizoot. Dis. Africa* 18(4): 351-354, illus. 1970. [From Biol. Abstr. 52(24), 1971. In English with French summ.] *WR 144: 59*
[Univ. Coll., Nairobi, Kenya.]

Cash, Betty, and Allen Cash. THE INDIAN RHINOCEROS AT HOME. *Field* (London) 238(6181): 89. 8 July 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 59*

Chapman, D. I. OBSERVATIONS ON THE SEXUAL CYCLE OF MALE DEER IN BRITAIN. *Mammal. Rev.* (London) 1(3): 49-52. Aug. 1970. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 59*

Chernyavski, F. B. [THE EXPERIENCE OF ESTIMATING THE NUMBER OF BIGHORN SHEEP IN KORYAK HIGHLANDS AND IN CHUKOTSK.] *Trans. IX Int. Congr. Game Biol.* p. 345-349. 1970. In Russian with English summ. *WR 144: 59*
[Zool. Inst. Akad. Nauk USSR, Leningrad, USSR.] *"Ovis nivicola."*

Cole, Glen F. AN ECOLOGICAL RATIONALE FOR THE NATURAL OR ARTIFICIAL REGULATION OF NATIVE UNGULATES IN PARKS. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 417-425, 1 fig. 1971. *WR 144: 59*
[Nat. Park Serv., Yellowstone Nat. Park, Wyo.]

Cranbrook, Earl of, and W. H. Payn. DISTRIBUTION OF DEER IN SUFFOLK. *Suffolk Natur. Hist.* 15(2): 123-127. Jan. 1970. [From J. Mammal. 52(3, suppl.), 1971. In English with French summ.] *WR 144: 59*

Daburon, H. METHODES DE RECENSEMENT DU CERF D'EUROPE *(CERVUS ELAPHUS L.)* EN FORET TEMPEREE MELANGEE FEUILLUS-RESINEUX EN L'ABSENCE DE NEIGE. [METHODS OF CENSUSING *CERVUS ELAPHUS* IN A MIXED HARDWOOD-CONIFEROUS FOREST DURING SNOW-LESS PERIODS.] *Trans. IX Int. Congr. Game Biol.* p. 289-293. 1970. In French with Russian summ. *WR 144: 59*
[Min. Agr. Nogent-sur-Vernisson, France.]

Dauphine, T. Charles, Jr. PHYSICAL VARIABLES AS AN INDEX TO CONDITION IN BARREN-GROUND CARIBOU. *Trans. NE Sect. Wildl. Soc., 28th NE Fish & Wildl. Conf.* p. 91-108, 3 figs. 1971. *WR 144: 59*
[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] A comparison of the results of variance ratio (F) tests on seasonal differences indicated that the kidney fat measurement was more sensitive than the other fat indices to overall seasonal change. Abdominal fat followed kidney fat in sensitivity. Back and marrow fat indices equaled or exceeded the two visceral deposits in sensitivity to change within their limited range of fluctuation. Body weight proved to be the most sensitive index of seasonal change but its usefulness at low levels of fat reserves was limited by the propensity to stabilize at a minimum level despite continued fat mobilization.--From abstr.

De Crombrugghe, S. A. MODES DE RECENSEMENT DU CERF *(CERVUS ELAPHUS* L.) EN BELGIQUE ET PORTEE PRATIQUE. [CENSUS METHODS FOR *CERVUS ELAPHUS* AND THEIR PRACTICAL APPLICATION IN BELGIUM.] *Trans. IX Int. Congr. Game Biol.* p. 298-306, 5 figs. 1970. In French with Russian summ. *WR 144: 60*
[Lab. Faunistique, Heverlee, Belgium.]

DESERT BIGHORN COUNCIL 1970 TRANSACTIONS. ii + 200 p., illus., photo-offset. [1971.] Available from Desert Bighorn Council, 1500 North Decatur Blvd., Las Vegas, Nevada 89108. *WR 144: 60*
Contains 22 papers as follows: *Status of desert bighorn in Inyo Mountains*, Vernon Burandt; *A progress report on bighorn habitat management in the San Bernardino National Forest*, Jerome T. Light; *Tongue color in desert bighorn*, Charles G. Hansen; *Helicopter observations of bighorn sheep on the San Andres National Wildlife Refuge*, John H. Kiger; *Summary of necropsy findings in desert bighorn sheep*, Jack B. Helvie and Donald D. Smith; *The 1969 sheep trapping and transplant program in Nevada*, Nick J. Papez and George K. Tsukamoto; *On the home range fidelity of bighorn rams*, V. Geist; *Nevada's 1969 bighorn sheep hunt*, George Tsukamoto; *Problem analysis of habitat management for desert bighorn sheep*, Benny R. Albrechtsen and Jerry B. Reese; *Bighorn habitat evaluation in the highland range of southern Nevada*, Gary J. Ferrier and W. Glen Bradley; *The role of public lands and the BLM in bighorn habitat management in Nevada*, Lewis H. Myers; *Scabies in desert bighorn sheep of the Desert National Wildlife Range*, Jerome V. Decker; *Hematology of desert bighorn sheep: a preliminary report*, W. Glen Bradley and Mohamed K. Yousef; *Whitey the unique bighorn*, Lanny O. Wilson; *Survey of bighorn sheep in California*, Jerry L. Mensch; *Status of bighorn sheep populations and habitat studies on the Inyo National Forest*, David J. Dunaway; *Recent spring work in Death Valley National Monument*, Paul A. Fedor; *Use of drugs as a capture technique for desert bighorn sheep*, H. Steven Logsdon; *Status of desert bighorn sheep and recent habitat developments in Utah*, Mayo W. Call and Carl Mahon; *Status of bighorn in Baja California*, Jose R. Oliver and Jose S. Sanchez; *Arizona desert bighorn sheep status report*, George W. Welsh; and *Water consumption of desert bighorn sheep*, Jack C. Turner.

DesMeules, P., B. R. Simard, and J. M. Brassard. A TECHNIQUE FOR THE CAPTURE OF CARIBOU *RANGIFER TARANDUS*, IN WINTER. *Canadian Field Natur.* 85(3): 221-229, 10 figs. July-Sept. 1971. *WR 144: 60*
[National and Historic Parks Branch, Ottawa, Ontario, Canada.] Abstract: A new technique for the capture of caribou in winter was developed in Northern Quebec, by the authors. Basically, the method consists of locating herds of caribou in the vicinity of large lakes that are used as loafing areas. Nets are set upright, across trails linking the lake to the surrounding forest. With the aid of two light aircraft, the caribou are then driven towards the nets where they become entangled. Eighty-seven caribou were caught during the experimental phase of this project. Once the technique had been perfected an average of eight caribou were captured per drive.

deVos, A. RESEARCH AND MANAGEMENT NEEDS FOR SOUTH EAST ASIAN BOVIDS. *IUCN Publ., New Ser.* (Morges) 17: 130-134. 1970. [From J. Mammal. 52(4, suppl.), 1971. In English with French summ.] *WR 144: 60*

Dieterich, Robert A., and Jack R. Luick. THE OCCURRENCE OF SETARIA IN REINDEER. *J. Wildl. Dis.* 7(4): 242-245, 3 figs. Oct. 1971. *WR 144: 60*
[Univ. Alaska, College.] Abstract: *Setaria yehi* Desset, 1966, is reported from domestic reindeer *(Rangifer tarandus* Linnaeus), maintained at College and Cantwell, Alaska. Microfilariae were present in blood from reindeer harboring *S. yehi*. Gross and microscopic findings in the infected animals revealed a low-grade peritonitis. Caribou, moose, dairy cows, goats, and dogs examined in the local areas were negative for microfilariae.

Dobroruka, L. J. ON THE IDENTITY OF *CERVUS NIGRICANS* BROOKE, 1877, WITH REMARKS UPON OTHER DEER FROM THE PHILIPPINES. *Zool. Meded. Rijks. Mus. Natuurlijke Hist.* (Leiden) 45(7): 91-97, illus. 1971. [From Biol. Abstr. 52(20), 1971.] *WR 144: 61*
[Zool. Gard., Prague, Czechoslovakia.] Distribution of Philippine species of *Rusa* and *Hyelaphus*.

Doster, Gary L., and Milton Friend. *SPICULOPTERAGIA* (NEMATODA) FROM DEER IN NORTH AMERICA. *J. Parasitol.* 57(3): 468. June 1971. *WR 144: 61*
[Univ. Ga., Athens.] First report of *Spiculopteragia* from North America.

Drescher-Kaden-Brüggemann, U., and K. Walser-Kürst. UNTERSUCHUNGEN ÜBER DEN VITAMIN-A-GEHALT IN DER LEBER VON WILDLEBENDEN RUMINANTIA IM VERGLEICH ZUM DOMESTIZIERTEN WIEDERKÄUER. [INVESTIGATION INTO THE VITAMIN A CONTENT OF THE LIVERS OF WILD RUMINANTS COMPARED WITH THOSE OF DOMESTIC RUMINANTS.] *Trans. IX Int. Congr. Game Biol.* p. 823-828. 1970. In German with Russian summ. *WR 144: 61*
[Univ. München, Munich, Germany.]

Dudziński, Wiesław. STUDIES ON *CEPHENEMYIA STIMULATOR* (CLARK) (DIPTERA, OESTRIDAE), THE PARASITE OF EUROPEAN ROE DEER, *CAPREOLUS CAPREOLUS* (L.). I. BIOLOGY. *Acta Parasitol. Polonica* (Warsaw) 18(49): 555-572 + 4 pls. 1970. [From J. Mammal. 52(4, suppl.), 1971. In English with Polish summ.] *WR 144: 61*

Dykova, I. PATHOGENIC INFLUENCE OF SUBCUTANEOUS FILARIAL WORMS INVADING RED DEER *(CERVUS ELAPHUS)*. *Trans. IX Int. Congr. Game Biol.* p. 711-712. 1970. In English with Russian summ. *WR 144: 61*
[Czechoslovak Acad. Sci., Prague, Czechoslovakia.]

Dzieciołowski, R. VARIATION IN RED DEER *(CERVUS ELAPHUS)* DIET IN RELATION TO THE SEASON OF THE YEAR AND TO ENVIRONMENT. *Trans. IX Int. Congr. Game Biol.* p. 794-798. 1970. In English with Russian summ. *WR 144: 61*
[Forestry Res. Inst., Warsaw, Poland.]

Ealey, E. H. M., and P. G. Taylor. AN EXPERIMENT IN COOPERATIVE GAME MANAGEMENT OF THE HOG OR PARA DEER *AXIS PORCINUS* (ZIMMERMAN). *Trans. IX Int. Congr. Game Biol.* p. 173-175. 1970. In English with Russian summ. *WR 144: 61*
"In Victoria, Australia."

Espmark, Yngve. INDIVIDUAL RECOGNITION BY VOICE IN REINDEER MOTHER-YOUNG RELATIONSHIP. FIELD OBSERVATIONS AND PLAYBACK EXPERIMENTS. *Behaviour* 40(3-4): 295-301 + 2 figs. on 2 pls. 1971. In English with German summ. *WR 144: 61*
[Univ. Stockholm, Stockholm, Sweden.] Summary: Observations and experiments were made on the ability of reindeer mothers and calves to identify each other by voice. Field observations showed that this ability is very well-developed and that discrimination is very good due to high individuality of the voices. Playback experiments with recorded sounds confirmed the field observations.

Fadeyev, E. V. [ARTIFICIAL SETTLING AND PERSPECTIVES OF BREEDING OF THE GREAT EUROPEAN DEER IN RUSSIA.] *Vestn. Mosk. Univ. Ser. VI Biol. Pochvoved.* 1: 19-24. 1971. [From J. Mammal. 52(4, suppl.), 1971. In Russian.] *WR 144: 61*

Franklin, William L. THE LAST OF THE VICUÑA. *Peruvian Times* 29(1508): 11-14. Reprinted by the Conservation Foundation, 14 Nov. 1969. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 61*

Franzmann, Albert Wilhelm. PHYSIOLOGIC VALUES OF BIGHORN SHEEP. *Ph.D. thesis, Univ. Idaho.* 107 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(6), 1971.] *WR 144: 61*
"Ovis canadensis."

Gabrashansky, P. [INFECTIOUS ENCEPHALOMIELITIS IN ROE DEER.] *Trans. IX Int. Congr. Game Biol.* p. 640-642. 1970. In Russian with English summ. *WR 144: 62*
[Vet.-Med. Fakul., Sofia, Bulgaria.]

Geist, Val. MOUNTAIN GOAT BEHAVIOUR. *Wildl. Rev.* (Victoria, B.C.) 5(10): 15-16. Summer 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 62*

Ghobrial, Laurice I. THE WATER RELATIONS OF THE DESERT ANTELOPE *GAZELLA DORCAS DORCAS*. *Physiol. Zool.* 43(4): 249-256. Oct. 1970. [From J. Mammal. 52 (3, suppl.), 1971.] *WR 144: 62*

Halloran, Arthur F. AN EXPERIMENTAL INTRODUCTION OF BIGHORN SHEEP INTO THE WICHITA MOUNTAINS OF OKLAHOMA. *Great Plains J.* 9(2): 85-90. Spring 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 62*

Hebert, Daryll, and I. McTaggart Cowan. NATURAL SALT LICKS AS A PART OF THE ECOLOGY OF THE MOUNTAIN GOAT. *Canadian J. Zool.* 49(5): 605-610. 1971. [From Biol. Abstr. 52(21), 1971.] *WR 144: 62*
[Univ. British Columbia, Vancouver, British Columbia, Canada.] Mountain goats *(Oreamnos americanus)* occupying the Rocky Mountain Trench area of southeastern British Columbia use natural earth licks in the spring (males) and early summer (females). Despite the low soil Na content the inference is that the goats are eating the earth to compensate for Na deficiency.

Hebert, Daryll M., and Ian McTaggart Cowan. WHITE MUSCLE DISEASE IN THE MOUNTAIN GOAT. *J. Wildl. Mgmt.* 35(4): 752-756. Oct. 1971. *WR 144: 62*
[Univ. British Columbia, Vancouver, British Columbia, Canada.] Abstract: A large proportion of 11 mountain goats *(Oreamnos americanus)* livetrapped for research purposes in the Rocky Mountain trench area of southeastern British Columbia developed paralytic symptoms in the hindquarters immediately upon being handled. The symptoms were strongly suggestive of white muscle disease of domestic livestock. Six mountain goats were confined for study. In three of these, progressive paresis led to death. Serum oxalacetic transaminase values, histological changes in muscle tissue of the hind leg, along with symptomatology, and the stress conditions under which symptoms developed, were all compatible with a diagnosis of the selenium deficiency myopathy referred to as white muscle disease. The local forage was shown to have selenium values known to accompany this pathology in domestic livestock.

Henry, Vernon G. DETECTING THE PRESENCE OF EUROPEAN WILD HOGS. *J. Tenn. Acad. Sci.* 44(4): 103-104, 2 figs. Oct. 1969. *WR 144: 62*
[Tenn. Game & Fish Comm., Nashville.] Abstract: Three basic characteristics that distinguish European hogs *(Sus scrofa)* from domestic swine are discussed. These characteristics are: striped pelage of young (dark stripe along back and six light brown and five black stripes on each side of the body); guard hairs of adult animals split at the end into several parts; and thirty-six chromosomes as compared to 38 for domestic swine.

Hoogstraal, Harry. *HAEMAPHYSALIS (H.) SAMBAR* SP. N. (IXODOIDEA: IXODIDAE), A PARASITE OF THE SAMBAR DEER IN SOUTHERN INDIA. *J. Parasitol.* 57(1): 173-176, 10 figs. Feb. 1971. *WR 144: 62*
[U.S. Naval Med. Res. Unit No. Three, Cairo, Egypt, UAR.] *Haemaphysalis (H.) sambar* is described from a single male collected in 1911 from a sambar deer, *Cervus unicolor niger*, in the mountains of Kerala, southwestern India.

Hoogstraal, Harry. *HAEMAPHYSALIS (KAISERIANA) BORNEATA* SP. N. (IXODOIDEA: IXODIDAE), A TICK OF THE *H. (K.) ACULEATA* GROUP PARASITIZING THE SAMBAR DEER IN BORNEO. *J. Parasitol.* 57(5): 1096-1098, 9 figs. Oct. 1971. *WR 144: 62*
[U.S. Naval Med. Res. Unit No. Three, Cairo, Egypt, UAR.] Abstract: *Haemaphysalis (Kaiseriana) borneata* sp. n., described from a single male collected from a sambar deer in northern Borneo in 1913, is related to *H. (K.) aculeata*

Lavarra and *H. (K.) cuspidata* Warburton, which parasitize the mouse deer and small-size carnivores in Ceylon and India. The *H. (K.) aculeata* group is remarkable for its elongate palpi and large spurs.

Hudson, Robert John. IMMUNOLOGY OF LUNGWORM *(PROTOSTRONGYLUS)* INFECTIONS OF THE ROCKY MOUNTAIN BIGHORN SHEEP. *Ph.D. thesis, Univ. British Columbia.* 1971. To obtain a microfilm copy please order directly from the National Library of Canada at Ottawa. [From Diss. Abstr. Int. B Sci. Eng. 32(5), 1971.] *WR 144: 63*
Protostrongylus stilesi, the parenchymal lungworm, has been attributed an important role in the widespread respiratory diseases of the Rocky Mountain bighorn sheep *(Ovis canadensis canadensis)*. This study was conducted to delineate some of the immunologic and non-specific interactions between parasite and host.

Isaković, I. ANTLER MORPHOLOGY IN THE RED DEER FROM BELJE INTRODUCTION AREA. *Trans. IX Int. Congr. Game Biol.* p. 818-821, 2 figs. 1970. In English with Russian summ. *WR 144: 63*
[Operat.-Nauch. Inst. "Dr. Ilija Djurišić", Belgrade, Yugoslavia.]

Ivanova, G. I. [ECOLOGICAL PRINCIPLES FOR PREVENTIVE MEASURES AGAINST METASTRONGYLOSIS OF WILD BOAR IN MOSCOW VICINITY.] *Trans. IX Int. Congr. Game Biol.* p. 612-615. 1970. In Russian with English summ. *WR 144: 63*

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[Alaska Coop. Wildl. Res. Unit, College.] Abstract: Among black-tailed deer *(Odocoileus hemionus sitkensis)*, roe deer *(Capreolus capreolus)*, and reindeer *(Rangifer tarandus)*, nitrogen levels in the contents of the rumen show consistent patterns of variation. Among deer of each species on the same range during the same season, the animal-derived nitrogen component of the rumen contents decreases as the vegetative nitrogen component increases. This inverse relationship may result from one, or more likely both, of the following causes. (1) The ability of the ruminant to maintain a fairly constant rumen environment to allow for its most efficient function. (2) An adaptability in these deer species to conpensate for low nitrogen levels in the forage by recycling of nitrogen through the saliva and further conservation of ruminal nitrogen by recycling it through successive generations of microbial populations. The apparent ability to compensate for variations in forage nitrogen levels is limited when deer are on range of general poor quality or during fall and winter when forage nitrogen levels are reduced.

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[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Abstract: Barren-ground caribou *(Rangifer tarandus groenlandicus)* were live-captured in tangle nets in northern Manitoba in April 1970. Groups of animals were located on frozen lakes by aerial reconnaissance and nets set on their back trails in the adjacent forest. The caribou were then herded into the nets by taxiing aircraft. Eighty caribou were captured in seven days, totaling 190 man-hours of effort. Success per caribou captured or unit of effort was most closely related to the nature of the netting site. Only 1.8 man hours per animal captured were required at the best sites. Netting success was also closely related to the configuration of the set, obovate and oblanceolate designs proving most effective. A total cost estimate per caribou captured was $60. Tangle netting may also provide the means for live-capture of other cervids under certain conditions.

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[8774 Mautern in Steiermark, Austria.]

Richter, Wolfgang von. NUMERICAL STATUS OF THE BLACK WILDEBEEST IN SOUTH AFRICA. *Biol. Conserv.* 3(3): 234-235. 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 68*

Richter, Wolfgang von. PAST AND PRESENT DISTRIBUTION OF THE BLACK WILDEBEEST, *CONNOCHAETES GNOU* ZIMMERMANN (ARTIODACTYLA: BOVIDAE) WITH SPECIAL REFERENCE TO THE HISTORY OF SOME HERDS IN SOUTH AFRICA. *Ann. Transvaal Mus.* 27(4): 35-57. 31 Mar. 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 68*

Romanovsky, V. P., and S. V. Kochanovsky. [BIOTECHNIYAN MEASURES AND POPULATION DYNAMICS OF UNGULATES IN "BYELOVEZHSKAYA PUSHCHA."] *Trans. IX Int. Congr. Game Biol.* p. 190-195, 2 figs. 1970. In Russian with English summ. *WR 144: 68*

Rukhlyadev, D. P. [HELMINTHIASES OF WILD *ARTIODACTYLA* IN THE CRIMEA AND THE CAUCASUS.] *Trans. IX Int. Congr. Game Biol.* p. 605-608. 1970. In Russian with English summ. *WR 144: 68*

Saegesser, Hannes. METRISCHE BEZIEHUNGEN ZWISCHEN GEWEIH UND SCHAEDEL BEIM REH (*CAPREOLUS C. CAPREOLUS* (L.)). [RELATIONS BETWEEN ANTLERS AND FRONTAL BONES IN THE ROE DEER (*CAPREOLUS C. CAPREOLUS* (L.)).] *Zool. Anz.* 185(1/2): 9-19, illus. 1970. [From Biol. Abstr. 52(22), 1971. In German with English summ.] *WR 144: 68*
[Naturhist. Mus., Bern, Switzerland.]

Samuelson, Jack. 1971 PRONGHORN ANTELOPE STATUS. *N. Dak. Outdoors* 34(3): 18-19, illus. Sept. 1971. *WR 144: 68*
A slight drop in antelope number and below normal production was recorded in the pronghorn antelope population survey. The drop may be an aftereffect of the 1968-1969 winter kill.

Semenov-Tian-Shansky, O. I. [DISTRIBUTION AND POPULATION DYNAMICS OF WILD REINDEER (*RANGIFER TARANDUS*) IN MURMAN REGION DURING 40 YEARS.] *Trans. IX Int. Congr. Game Biol.* p. 329-334, 4 figs. 1970. In Russian with English summ. *WR 144: 68*

Siefke, A. DIE ROLLE DES DAMWILDES (*CERVUS DAMA DAMA* L.) BEI DER STEIGERUNG DER JAGDWIRTSCHAFTLICHEN PRODUKTIVITÄT. [THE ROLE OF *CERVUS DAMA DAMA* IN THE INCREASE OF WILDLIFE PRODUCTIVITY THROUGH MANAGEMENT.] *Trans. IX Int. Congr. Game Biol.* p. 788-793. 1970. In German with Russian summ. *WR 144: 68*
[Inst. Forstwissenschaften Eberswalde, Eberswalde, Germany.]

Singh, Arjan. THE SWAMP DEER OF NORTH KHERI. *IUCN Publ., New Ser.* (Morges) 18: 52-54. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 68*

Skuncke, Folke. REINDEER ECOLOGY AND MANAGEMENT IN SWEDEN. *Biol. Pap. Univ. Alaska* no. 8. 82 p., 8 figs. Feb. 1969. Price $1.70. *WR 144: 69*
[Karl X Gustafs gata 62, Hälsingborg, Sweden.] Summary of author's work on reindeer ecology and management in Sweden.

Smirnov, Y. A. [ESTIMATE OF THE SAIGA ANTELOPE *(SAIGA TATARICA)* IN THE KAZAKH SSR.] *Trans. IX Int. Congr. Game Biol.* p. 340-344. 1970. In Russian with English summ. *WR 144: 69*

Stelfox, John G. BIGHORN SHEEP IN THE CANADIAN ROCKIES: A HISTORY 1800-1970. *Canadian Field Natur.* 85(2): 101-122, 9 figs. Apr.-June 1971. *WR 144: 69*
[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] Population fluctuations of bighorn sheep, *Ovis canadensis canadensis* Shaw, on the eastern slope of the Canadian Rockies and on the western slope in Kootenay National Park are discussed for the period 1800 to 1967. Causes of fluctuations discussed are hunting, range conditions, elk and livestock competition, severe winters, and pneumonia-lungworm disease. Future fluctuations are predicted by these factors.--From abstr.

Strandgaard, H. STUDIES ON THE BEHAVIOUR OF MARKED ROE DEER WITH RELATION TO THE REGULATION OF THEIR NUMBERS. *Trans. IX Int. Congr. Game Biol.* p. 314-318. 1970. In English with Russian summ. *WR 144: 69*
"Capreolus capreolus in East Jutland."

Stubbe, C. DIE ROLLE DES REHWILDES BEI DER STEIGERUNG DER JAGDWIRTSCHAFTLICHEN PRODUKTIVITÄT. [THE ROLE OF *CAPREOLUS CAPREOLUS* IN THE INCREASE OF WILDLIFE PRODUCTIVITY THROUGH MANAGEMENT.] *Trans. IX Int. Congr. Game Biol.* p. 802-806. 1970. In German with Russian summ. *WR 144: 69*
[Tech. Univ. Dresden, Dresden, Germany.]

Stubbe, H. GENETISCHE PROBLEME IN DER REHWILDFORSCHUNG. [PROBLEMS OF GENETICS IN ROE DEER INVESTIGATIONS.] *Trans. IX Int. Congr. Game Biol.* p. 839-844. 1970. In German with Russian summ. *WR 144: 69*
[Deutsche Akad. Landwirtschaftwissenschaften Berlin, Berlin, Germany.]

Sweeney, J. M., E. E. Provost, and J. R. Sweeney. A COMPARISON OF EYE LENS WEIGHT AND TOOTH IRRUPTION PATTERN IN AGE DETERMINATION OF FERAL HOGS *(SUS SCROFA). Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 285-291, 2 figs. 1970 [1971]. *WR 144: 69*
[Colo. State Univ., Fort Collins.] Abstract: A study was conducted on the A.E.C. Savannah River Plant, Aiken, South Carolina, to determine if eye lens weight was a reliable indicator of age in feral swine. A strong correlation ($r = 0.95$) was found between eye lens weight and tooth irruption age. In most cases, when body weight failed, eye lens weight remained a dependable indicator of age in feral hogs. Eye lens weight can therefore be used as a reliable age criterion in feral hogs. With the establishment of an eye lens weight-to-age curve based on known-age animals, eye lens weight may prove to be better than tooth irruption for indicating the age structure of a feral hog population.

Swope, Harold M. BIG GAME RESEARCH. DEER-ELK INVESTIGATIONS. *Colo. Game Res. Rev.* 1969: 16-22. June 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 69*

Ustinov, S. K. [ON ADAPTIVENESS OF MUSK DEER *(MOSCHUS MOSCHIFERUS)* BEHAVIOUR.] *Trans. IX Int. Congr. Game Biol.* p. 829-831. 1970. In Russian with English summ. *WR 144: 69*

Ustinov, S. K. [TRACING THE MUSK DEER.] *Priroda* (Moscow) 1: 83-88. 1971. [From J. Mammal. 52(3, suppl.), 1971. In Russian.] *WR 144: 69*

Vaher, Ervin. [ELKS AT ULVI.] *Estonian Natur.* 14(6): 359. June 1971. [From J. Mammal. 52(4, suppl.), 1971. In Estonian.] *WR 144: 69*

Valtonen, M. THE ROLE OF THE REINDEER AS CARRIER OF TULAREMIA. *Trans. IX Int. Congr. Game Biol.* p. 657-661, 3 figs. 1970. In English with Russian summ. *WR 144: 70*
[State Vet. Med. Inst., Helsinki, Finland.] "The results of this investigation have led us to the conclusion that reindeer is very resistant to *P[asturella] tularensis* infection and probably does not serve as a carrier of the infection."

Vilkitis, James R. THE VIOLATION SIMULATION FORMULA PROVES AS RELIABLE AS FIELD RESEARCH IN ESTIMATING CLOSED-SEASON ILLEGAL BIG GAME KILL IN MAINE. *Trans. NE Sect. Wildl. Soc., 28th NE Fish & Wildl. Conf.* p. 141-144. 1971. *WR 144: 70*
[Maine Dep. Inland Fisheries & Game, Bangor.] Abstract: The equation for estimating illegal closed season big game kill proved as reliable as the violation simulation technique in Maine. The equation, formulated from a study in Idaho, predicted an illegal kill of 16,714 animals. Through field research, it was estimated that 18,033 animals were taken during five months of the closed season; and that 27,780 night hunting violations occurred prior to and during the 1970 hunting season. Violation simulation was the primary technique employed to verify the illegal kill equation.

Walther, F. R. AGE, SEX AND SOCIAL STATUS OF THOMSON'S GAZELLE IN CORRELATION WITH FLIGHT FROM PREDATORS. *Trans. IX Int. Congr. Game Biol.* p. 500-501. 1970. In English with Russian summ. *WR 144: 70*

Ward, A. Lorin. IN VITRO DIGESTIBILITY OF ELK WINTER FORAGE IN SOUTHERN WYOMING. *J. Wildl. Mgmt.* 35(4): 681-688, 2 figs. Oct. 1971. *WR 144: 70*
[Rocky Mountain Forest & Range Exp. Sta., Laramie, Wyo.] Dry-matter digestibility coefficients were determined on several south-central Wyoming forage species using elk *(Cervus canadensis)* and steer rumen inocula.--From abstr.

Weidenmüller, H. DISCOVERY OF *PASTEURELLA* IN WILD ROE DEER. *Tierärztl. Umsch.* 25: 449-450. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 70*

Wesley, David Eugene. ENERGY AND WATER FLUX IN PRONGHORN. *Ph.D. thesis, Colo. State Univ.* 93 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(5), 1971.] *WR 144: 70*
"Antilocapra americana."

Wika, M., and J. Krog. SURFACE TEMPERATURES AND AVENUES OF HEAT LOSS DURING SUMMER CONDITIONS IN REINDEER WITH GROWING ANTLERS. *Norwegian J. Zool.* 19(1): 89-91, illus. 1971. [From Biol. Abstr. 52(23), 1971.] *WR 144: 70*
[Univ. Oslo, Oslo, Norway.] The antlers of *Rangifer tarandus* L. are of minor importance in thermoregulation.

Yakushkin, G. D., L. N. Michurin, B. M. Pavlov, and V. A. Zyryanov. [THE NUMBERS AND MIGRATION OF WILD REINDEER *(RANGIFER TARANDUS)* ON THE TAIMIR PENINSULA.] *Trans. IX Int. Congr. Game Biol.* p. 335-339. 1970. In Russian with English summ. *WR 144: 70*

Żurowski, W., H. Siudowa, and B. Gaźka. EFFECT OF SINGLE PIG'S BLOOD ADDITION ON THE LOCAL WILD BOAR *(SUS SCROFA)* POPULATION. *Trans. IX Int. Congr. Game Biol.* p. 235-238. 1970. In English with Russian summ. *WR 144: 70*
[Pol. Akad. Nauk, Popielno, Poland.]

Zykov, K. D. [AERIAL COUNT OF THE FOREST UNGULATES.] *Trans. IX Int. Congr. Game Biol.* p. 310-313. 1970. In Russian with English summ. *WR 144: 70*

Þorsteinsson [Thorsteinsson], Ingvi, Arnþór Garðarsson, Gunnar Ólafsson, and Gylfi M. Guðbergsson. [REINDEER IN ICELAND AND THEIR SUMMER RANGES.] *Náttúrufraedingurinn* (Reykjavík) 40(3): 145-170. Nov. 1970. [From J. Mammal. 52 (3, suppl.), 1971. In Icelandic with English summ.] *WR 144: 70*

Anderson, Allen E., Dean E. Medin, and David C. Bowden. ADRENAL WEIGHT IN A COLORADO MULE DEER POPULATION. *J. Wildl. Mgmt.* 35(4): 689-697, 4 figs. Oct. 1971. *WR 144: 71*
[Colo. Div. Game, Fish & Parks, Fort Collins.] *"Odocoileus hemionus."*

Bandy, P. J., I. McT. Cowan, and A. J. Wood. COMPARATIVE GROWTH IN FOUR RACES OF BLACK-TAILED DEER *(ODOCOILEUS HEMIONUS)*. PART I. GROWTH IN BODY WEIGHT. *Canadian J. Zool.* 48(6): 1401-1410. Nov. 1970. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 71*

Byford, James L. MOVEMENT RESPONSES OF WHITE-TAILED DEER TO CHANGING FOOD SUPPLIES. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 63-78, 4 figs. 1969 [1970]. *WR 144: 71*
[Univ. Ga., Athens.]

Byford, James L. TELEMETRICALLY DETERMINED MOVEMENTS OF TWO WHITE-TAILED DEER FAWNS IN SOUTHWESTERN ALABAMA. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 57-63, 4 figs. 1970 [1971]. *WR 144: 71*
[Univ. Ga., Athens.]

Cotton, Dan, and Jack Herring. A PRELIMINARY SURVEY OF PESTICIDE RESIDUES IN WHITETAIL DEER *(ODOCOILEUS VIRGINIANUS)*. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 23-30, 3 figs. 1970 [1971]. *WR 144: 71*
Abstract: A pesticide analysis was run on 21 deer collected from the Mississippi Delta Region during the winter of 1969-1970. The primary tissues analyzed were flesh, liver and fat. The residues found were DDT and its metabolites. Average DDT and metabolites concentrations of the tissues were: flesh 0.062 p.p.m.; liver 0.194 p.p.m.; fat 1.210 p.p.m.

Daniel, Walton S., and Don B. Frels. A TRACK-COUNT METHOD FOR CENSUSING WHITE-TAILED DEER. *Tex. Parks & Wildl. Dep. Tech. Ser.* no. 7. 18 p., 4 figs. 1971. *WR 144: 71*
[Tex. Parks & Wildl. Dep., Fairfield.] The track-count technique is best adapted for use on management areas, single counties, or relatively small areas requiring intensive data for research and management purposes.

Dimock, Edward J. II. INFLUENCE OF DOUGLAS-FIR SEEDLING HEIGHT ON BROWSING BY BLACK-TAILED DEER. *Northwest Sci.* 45(2): 80-86, illus. 1971. [From Biol. Abstr. 52(21), 1971.] *WR 144: 71*
[Pac. Northwest Forest Range Exp. Sta., Olympia, Wash.] Preliminary results revealed that feeding preference of black-tailed deer *(Odocoileus hemionus columbianus)* to douglas fir *(Pseudotsuga menziesii)* differed markedly among the races tested. Further testing and analysis showed that preferences were strongly linked to small variations in seedling height, independent of seed origin.

Graves, H. B., and E. D. Bellis. DEER AND MOTORISTS--CAN THEY COEXIST? *Pa. Game News* 42(12): 40-42, 1 fig. Dec. 1971. *WR 144: 71*
[Pa. State Univ., University Park.] Deer behavior and mortality along Pennsylvania highways are reported.

Healy, William M. FORAGE PREFERENCES OF TAME DEER IN A NORTHWEST PENNSYLVANIA CLEAR-CUTTING. *J. Wildl. Mgmt.* 35(4): 717-723. Oct. 1971. *WR 144: 71*
[Northeastern Forest Exp. Sta., Morgantown, W. Va.] Abstract: Three tame white-tailed deer *(Odocoileus virginianus)*--a male, a female, and a castrated male--were observed foraging in a 17.1-acre clear-cutting during all seasons of 1 year. The area had been cut 4 years previously to regenerate northern hardwoods. Deer preferred green leaves to twigs. Blackberry *(Rubus spp.)* was the most used food plant year-round. Trees and shrubs were most heavily browsed in winter (48.9% of feeding time). Stump sprouts of beech *(Fagus grandifolia)* accounted for 35.7 and 23.2%, respectively, of the winter and late spring feeding time. Seedlings of black cherry *(Prunus serotina)* were lightly browsed in all

seasons. Ferns, grass, sedge, and dogtooth violet *(Erythronium americanum)* were important in early spring before leaves appeared on woody vegetation. Ferns were staple food items in late autumn and winter. Fallen, dry leaves eaten in all seasons accounted for 9.4% of the winter feeding time. Foraging by deer did not appear to be preventing tree regeneration; however, such clear-cuttings should be at least 17 acres to avoid a food-patch effect that could concentrate browsing.

Hesselton, William T., and Lawrence Jackson. SOME REPRODUCTIVE ANOMALIES IN FEMALE WHITE-TAILED DEER FROM NEW YORK. *Trans. NE Sect. Wildl. Soc., 28th NE Fish & Wildl. Conf.* p. 37-45, 1 fig. 1971. *WR 144: 72*

[N.Y. State Dep. Environ. Conserv., Albany.] Abstract: A total of 2,069 pregnant white-tailed deer and 3,575 associated embryos were examined. Ten instances of polyovulation were noted. Intrauterine migration of fertilized ova had occurred in 48% of the specimens for which the necessary data were complete. Five instances involving twin embryos in one uterine horn and none in the other were noted. Dermoid ovarian cysts were noted in seven instances. Data on the incidence of dead embryos *in utero*, mummification and embryo emaciation were recorded. No evidence of abortion was found. Data on size differences among twin embryos of opposite sex indicated that males grew more rapidly than females and that, at term, males were longer than females in 65% of the cases. Data for multiple embryos in the same uterus showed a size differential of 10% or more in 7.5% of such groups.

Huisman, T. H. J., A. M. Dozy, and M. H. Blunt. THE HEMOGLOBIN HETEROGENEITY OF THE VIRGINIA WHITE-TAILED DEER: A POSSIBLE GENETIC EXPLANATION. *Arch. Biochem. Biophys.* 127: 711-717, 4 figs. Sept. 1968. *WR 144: 72*

[Med. Coll. Ga., Augusta.] *"Odocoileus virginianus."*

Jackson, Lawrence W., and William T. Hesselton. BREEDING AND PARTURITION DATES FOR THE VARIOUS AGE CLASSES OF FEMALE WHITE-TAILED DEER *(ODOCOILEUS VIRGINIANUS BOREALIS)* IN NEW YORK. *Trans. NE Sect. Wildl. Soc., 28th NE Fish & Wildl. Conf.* p. 21-35, 5 figs. 1971. *WR 144: 72*

[N.Y. State Dep. Environ. Conserv., Albany.] Abstract: Fawn breeding in New York takes place at a significantly later date than breeding for older age groups of deer. Mean breeding dates were December 6 for fawns, November 21 for yearlings and November 22 for two and one-half and older deer. Mean parturition dates were June 25 for fawns, June 12 for yearlings and June 13 for two and one-half and older deer. Physical condition as determined by femur bone marrow fat was not related to breeding date in any given animal. Mean and median breeding and parturition dates are given for ten New York Deer Sections. Several limitations are given of the method derived by Cheatum and Morton (1946) for calculation of breeding and parturition dates, and recommendations are made for further study.

Kistner, Theodore P., and Frank A. Hayes. SARCOMA IN AN AGED WHITE-TAILED DEER. *J. Wildl. Mgmt.* 35(4): 850-852, 2 figs. Oct. 1971. *WR 144: 72*

[Univ. Ga., Athens.] Abstract: A highly undifferentiated sarcoma was encountered in the left rear leg of a wild female white-tailed deer *(Odocoileus virginianus)* that had died at a minimum age of 11 years. The neoplasm had metastasized to the left inguinal lymph node, both adrenal glands, kidneys, liver, and lungs. The ear-tagged animal had been captured 10 years earlier by the remote delivery of alkaloidal nicotine. Speculation was presented concerning possible inciting agents of the tumor.

Kistner, Theodore P., Emmett B. Shotts, Jr., and Ellen W. Greene. NATURALLY OCCURRING CUTANEOUS STREPTOTHRICOSIS IN A WHITE-TAILED DEER *(ODOCOILEUS VIRGINIANUS)*. *J. Amer. Vet. Med. Ass.* 157(5): 633-635, 1 fig. 1 Sept. 1970. *WR 144: 72*

[Univ. Ga., Athens.] Oral and foot lesion on a deer, *Odocoileus virginianus*, killed by *Dermatophilus congolensis* were clinically indistinguishable from lesions of vesicular stomatitis or foot-and-mouth disease.

Krämer, August. NOTES ON THE WINTER ECOLOGY OF THE MULE AND WHITE-TAILED DEER IN THE CYPRESS HILLS, ALBERTA. *Canadian Field Natur.* 85(2): 141-145. Apr.-June 1971. *WR 144: 73*

[Aussenstation der Universität, Birchstrasse 95, Zurich, Switzerland.] Abstract: White-tailed deer *(Odocoileus virginianus)* were observed to tolerate extreme cold without seeking forest cover, perhaps because of the presence of coyotes *(Canis latrans)*. A small amount of snow in late fall caused whitetails to abandon a range which was occupied the previous year when there was no snow. A relationship is suggested between territoriality and the stability of the environment during the rut.

Libke, K. G., and H. S. Mosby. STRESS-INDUCED HEMOPERICARDIUM (CARDIAC TAMPONADE) IN A DEER. *J. Amer. Vet. Med. Ass.* 153(7): 813-815. Oct. 1968. *WR 144: 73*

[Va. Polytech. Inst., Blacksburg.] Summary: A Virginia white-tail deer died in transit following its capture during a restocking program. At necropsy, hemopericardium (cardiac tamponade) attributed to fear and stress was found.

Marchinton, R. Larry, A. Sydney Johnson, John R. Sweeney, and James M. Sweeney. LEGAL HUNTING OF WHITE-TAILED DEER WITH DOGS: BIOLOGY, SOCIOLOGY AND MANAGEMENT. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 74-89, 2 figs. 1970 [1971]. *WR 144: 73*

[Univ. Ga., Athens.] The effects of dogs on behavior, movements and welfare of 57 different radio-equipped deer in Alabama, Florida, Georgia, and South Carolina were studied. Six of these animals were experimentally chased with hunting dogs in a way designed to simulate very intensive dog hunting. Information from telemetric and pen studies, field observations, kill data and other sources was analyzed to evaluate the effects of hunting with dogs on reproduction, mortality and harvest efficiency.--From abstr.

Mautz, William W., and George A. Petrides. FOOD PASSAGE RATE IN THE WHITE-TAILED DEER. *J. Wildl. Mgmt.* 35(4): 723-731, 2 figs. Oct. 1971. *WR 144: 73*

[Univ. N.H., Durham.] *"Odocoileus virginianus."*

McGinnes, Burd S., and Robert L. Downing. FAWN MORTALITY IN A CONFINED VIRGINIA DEER HERD. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 188-191. 1969 [1970]. *WR 144: 73*

[Va. Coop. Wildl. Res. Unit, Blacksburg.] Abstract: A 2,322-acre enclosure which contains an estimated deer per 5 acres, is used for deer ecology studies. During the past 5 years, 258 fawns have been captured, marked, and released; 229 are known to have survived to 2 months of age. Observations have revealed data on fawn mortality by age at time of capture, by sex, by year, by multiple birth, and abnormalities. Methods used are described for capture of fawns. Causes of fawn mortality cannot always be identified, but survival of marked individuals is known.

McLaughlin, F. Loy, Lawrence E. Garland, Benjamin W. Day, and Marshall D. Ashley. DELINEATION OF DEER MANAGEMENT ZONES IN VERMONT BASED ON PHYSICAL CHARACTERISTICS. *Trans. NE Sect. Wildl. Soc., 28th NE Fish & Wildl. Conf.* p. 47-66, 7 figs. 1971. *WR 144: 73*

[Vt. Fish & Game Dep., Roxbury.] Abstract: This study was designed to establish deer management zones in Vermont. Analysis of the data collected between 1964 and 1969 indicated that three biologically distinct deer zones existed in Vermont. High densities of deer disguised differences that should have occurred in recognized physiographic zones. Dressed weight and antler beam diameter of yearling bucks appeared to be the best measurements available to represent herd vigor.

Michael, Edwin D. SEX RATIO AND GROUP COMPOSITION IN WHITE-TAILED DEER. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 51-56, 3 figs. 1970 [1971]. *WR 144: 74*

[W. Va. Univ., Morgantown.] Seasonal variations in sex ratio and group composition of white-tailed deer *(Odocoileus virginianus)* were studied on the Welder Refuge, Texas. Group size varied from 3.2 to 7.3 with a mean of 4.9. Sex ratio (males to females) varied from 27:100 to 42:100 with a mean of 35:100. Group composition also varied throughout the year, due to variations in reproductive behavior. Data indicate that total counts are best conducted in April but sex ratios are best determined in August.--From abstr.

Perry, Matthew C., and Robert H. Giles, Jr. STUDIES OF DEER-RELATED DOG ACTIVITY IN VIRGINIA. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 64-73, 2 figs. 1970 [1971]. *WR 144: 74*

[Patuxent Wildl. Res. Cent., Laurel, Md.] Three study areas and five techniques were used in this study of movements and activities of dogs and influence of dogs on deer. Radio-tracking with telemetry equipment was ineffective due to infrequent and unpredictable movement of dogs. The percentage of licensed dogs estimated from surveys of rural inhabitants was suggested to be inversely related to the number of residents under a dog warden's responsibility. Activity indices determined from sand plot track counts for dogs were not significantly different for three study areas and for the three seasons. Dogs appeared to be most active in the morning between 7:00 AM and 10:00 AM. Activity and movement data from this study were compared with questionnaire responses from game wardens and biologists.--From abstr.

Prestwood, Annie K. CESTODES OF WHITE-TAILED DEER *(ODOCOILEUS VIRGINIANUS)* IN THE SOUTHEASTERN UNITED STATES. *J. Parasitol.* 57(6): 1292. Dec. 1971. *WR 144: 74*

[Univ. Ga., Athens.]

Quay, W. B., and Dietland Müller-Schwarze. RELATIONS OF AGE AND SEX TO INTEGUMENTARY GLANDULAR REGIONS IN ROCKY MOUNTAIN MULE DEER *(ODOCOILEUS HEMIONUS HEMIONUS). J. Mammal.* 52(4): 670-685, 7 figs. Nov. 1971. *WR 144: 74*

[Univ. Calif., Berkeley.]

Reed, Dale F. GIVING THE DEER THE STEER. *Colo. Outdoors* 20(5): 10-13, illus. Sept.-Oct. 1971. *WR 144: 74*

Use of eight-ft. fencing, one-way gates, and deer underpasses as means of reducing deer mortality on highways is discussed.

Rees, John W. DISCRIMINATORY ANALYSIS OF DIVERGENCE IN MANDIBULAR MORPHOLOGY OF *ODOCOILEUS. J. Mammal.* 52(4): 724-731, 1 fig. Nov. 1971. *WR 144: 74*

[Univ. Tex. Med. Branch, Galveston.]

Samuel, W. M., and D. O. Trainer. SOME ECOLOGIC FACTORS INFLUENCING *EIMERIA MCCORDOCKI* HONESS, 1941 IN WHITE-TAILED DEER *ODOCOILEUS VIRGINIANUS* (ZIMMERMANN). *J. Protozool.* 18(2): 306-308. May 1971. *WR 144: 74*

[Univ. Wis., Madison.] Immunity, environmental change, intensive and concentrated grazing behavior by deer in open areas are presented as ecologic factors influencing *Eimeria mccordocki.*--From synopsis.

Sauer, Peggy R. TOOTH SECTIONING VERSUS TOOTH WEAR FOR ASSIGNING AGE TO WHITE-TAILED DEER. *Trans. NE Sect. Wildl. Soc., 28th NE Fish & Wildl. Conf.* p. 9-20, 2 figs. 1971. *WR 144: 74*

[State Univ. N.Y., Albany.] Abstract: The tooth sectioning technique for correlating cementum annuli with age was applied to a sample of 55 known-age deer *(Odocoileus virginianus)* from New York State ranging in age from one to six and one-half years and was found to be 84% accurate for assigning age to this sample. The Wilcoxon matched-pairs signed-ranks nonparametric test indicated significant differences between the two techniques for assigning age to individual deer from

Anticosti Island, Province of Quebec, Hamilton County and Delaware-Ulster Counties, New York. A Chi-square test of independence between age distributions by tooth wear and tooth sectioning techniques indicated significant differences for samples from Anticosti Island, Province of Quebec, but no significant differences for samples from Hamilton, Delaware-Ulster and Ontario Counties, New York. No consistent pattern of aging differences by age class was obvious so that tooth wear age distributions could be adjusted. No parameter whatever should be associated with an individual deer older than one year, seven months until its age has been assigned by root inspection for closure or by tooth sectioning, unless it is to be used in a gross grouping of all animals older than yearlings.

Short, Henry L. FORAGE DIGESTIBILITY AND DIET OF DEER ON SOUTHERN UPLAND RANGE. *J. Wildl. Mgmt.* 35(4): 698-706. Oct. 1971. *WR 144: 75*
[Southern Forest Exp. Sta., Nacogdoches, Tex.] Abstract: Four white-tailed deer *(Odocoileus virginianus)* were shot from a mixed pine-hardwood habitat in east Texas at each of six consecutive 10-week intervals. Browse items made up at least 19% of the diet in all seasons. Forbs were important dietary constituents in May, mushrooms in July, and acorns in autumn. Acetic acid:propionic acid ratios in rumen liquor samples were wider in the spring after a poor mast year (4:1) than during other seasons (2:1). More gas (5 ml gas per gram of solids per hour) was produced in controlled fermentations of rumino-reticular (R-R) contents of deer feeding on acorns than on other dietary items. In in vitro digestion trials, composited mixed browse, mixed forbs, mixed grasses, and loblolly pine *(Pinus taeda)* samples were generally highest in nutrient quality during spring. Grasses and forbs were significantly less digestible when mature than when immature. Forbs were digested better than were browse or pine tissues. Dead leaves were poorly digested. Green grasses selected during the winter were as digestible as those growing during spring and summer. Forages most refractory to microbial fermentation had higher lignin:acid-detergent fiber (ADF) ratios than other foodstuffs.

Smith, Kenneth C. A TECHNIQUE FOR CAPTURING WHITE-TAIL DEER IN THE DELTA MARSH BY USE OF AIRBOATS AND HELICOPTERS. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 59-63. 1969 [1970]. *WR 144: 75*
[La. Wild Life & Fisheries Comm., Baton Rouge.]

Stone, Ward B., Stuart L. Free, William T. Hesselton, and Lawrence W. Jackson. POLYDACTYLISM IN A WHITE-TAILED DEER FROM NEW YORK. *N.Y. Fish & Game J.* 17(2): 131-132, 2 figs. July 1970. *WR 144: 75*
[N.Y. State Dep. Environ. Conserv., Albany.] A 2.5-year-old female white-tailed deer, *Odocoileus virginianus*, shot in Seneca County, N.Y., had a polydactylous right front limb. No other abnormalities were found in autopsy. Two fetuses, one male and one female, found in the uterus did not exhibit the condition.

Stone, Ward B., and John R. Palmateer. A BIRD INGESTED BY A WHITE-TAILED DEER. *N.Y. Fish & Game J.* 17(1): 63. Jan. 1970. *WR 144: 75*
[N.Y. State Dep. Environ. Conserv., Albany.] Tissues resembling breast muscle of a small bird were found along with several bits of feathers and two bird legs in the rumen of a white-tailed deer, *Odocoileus virginianus*, poisoned by arsenic.

Sweeney, John R., R. Larry Marchinton, and James M. Sweeney. RESPONSES OF RADIO-MONITORED WHITE-TAILED DEER CHASED BY HUNTING DOGS. *J. Wildl. Mgmt.* 35 (4): 707-716, 3 figs. Oct. 1971. *WR 144: 75*
[Univ. Ga., Athens.] Abstract: Studies were conducted on three separate areas--Auburn, Alabama; Eglin Air Force Base, Florida; and Savannah River Plant, South Carolina--to determine the responses of white-tailed deer *(Odocoileus virginianus)* to chasing by hunting dogs *(Canis familiaris)*. Deer chosen for harassment were animals that had been studied by telemetry until normal behavior, movement patterns, and ranges were delineated. In every chase the deer escaped the hounds, and all deer remained in good physical condition throughout the study. Behavior that resulted in escape was classified into five categories:

holding, distance running, circuitous zigzag running, separating from a group, and using escape habitat. Chases averaged 33 minutes in duration and 2.4 miles in distance with maximums of 155 minutes and 13.4 miles recorded. Deer in high populations were more difficult to chase for extended periods than those in low populations. Although the deer did not require water for escape, they usually selected swamps or other bodies of water when these were available. The deer could readily be chased out of their home ranges, but usually they returned in 1 day or sooner.

Telfer, Edmund S. CHANGES IN CARRYING CAPACITY OF DEER RANGE IN WESTERN NOVA SCOTIA. *Canadian Field Natur.* 85(3): 231-234. July-Sept. 1971. *WR 144: 76*
[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] Comparison of proportional changes in land classes from two forest inventories between 1910 and 1956 suggest that the yield of browse in western Nova Scotia dropped a minimum of 30%. Selective feeding by white-tailed deer *(Odocoileus virginianus)* has further reduced the availability of desirable deer food plants.--From abstr.

Ullrey, D. E., W. G. Youatt, H. E. Johnson, L. D. Fay, D. B. Purser, B. L. Schoepke, and W. T. Magee. LIMITATIONS OF WINTER ASPEN BROWSE FOR THE WHITE-TAILED DEER. *J. Wildl. Mgmt.* 35(4): 732-743, 1 fig. Oct. 1971. *WR 144: 76*
[Mich. State Univ., East Lansing.] Abstract: Sixty white-tailed deer *(Odocoileus virginianus)* were used in three experiments to study the nutritional characteristics of large-toothed aspen *(Populus grandidentata)*. Aspen and white cedar *(Thuja occidentalis)* browse were ground and pelleted separately or in mixtures. Aspen pellets were accepted less readily by deer than were cedar pellets, and the presence of as little as 15% aspen in a cedar-aspen pellet tended to decrease the digestibilities of dry matter, gross energy, cell-wall constituents, and hemicellulose as compared with 100% cedar. This amount of aspen also decreased the concentration of volatile fatty acids, increased the acetate:propionate ratio, and reduced the detectable concentration of protozoa to nearly zero in rumen fluid. Addition of urea nitrogen (0.9% urea 281) to pellets composed of 85% cedar and 15% aspen increased digestibility of crude protein and the acetate:propionate ratio of the rumen fluid and decreased the concentration of glucose in the blood plasma. The addition of 10% cornstarch as a supplementary source of energy improved digestibility of dietary dry matter, gross energy, cell-wall constituents, and hemicellulose and increased the concentration of rumen protozoa. A combination of urea and starch produced the greatest improvement in significant nutritional parameters, except for the concentration of protozoa. Application of these findings to deer management requires the identification of other native food species that could improve the supply of nitrogen and available energy to wintering deer and that are amenable to techniques of forest management. During extreme winter emergencies, appropriately formulated energy-producing and nitrogen supplements may be helpful in improving utilization of cedar-aspen browse.

Whelan, James B., Richard F. Harlow, and Hewlette S. Crawford. SELECTIVITY, QUALITY, AND *IN VITRO* DIGESTIBILITY OF DEER FOODS: A TENTATIVE MODEL. *Trans. NE Sect. Wildl. Soc., 28th NE Fish & Wildl. Conf.* p. 67-81, 2 figs. 1971. *WR 144: 76*
[Bur. Sport Fisheries & Wildl., Blacksburg, Va.] Abstract: Three deer chosen for their tractibility were planed on leashes and used to determine food selectivity during early spring in a seven-year-old pine seed-tree cut located on the Jefferson National Forest in western Virginia. Three methods were used to evaluate the digestibility and nutrient constituents of the forages, which represented mixed diets.

Wood, John E., Thomas S. Bickle, Wainright Evans, James C. Germany, and Volney W. Howard, Jr. THE FORT STANTON MULE DEER HERD (SOME ECOLOGICAL AND LIFE HISTORY CHARACTERISTICS WITH SPECIAL EMPHASIS ON THE USE OF WATER). *N. Mex. State Univ. Agr. Exp. Sta. Bull.* no. 567. 31 p., 8 figs. Sept. 1971. *WR 144: 76*
Establishing new sources of permanent water in areas where water distribution is poor is a sound mule deer management practice.--From summ.

Wyand, D. S., C. F. Helmboldt, and S. W. Nielsen. MALIGNANT CATARRHAL FEVER IN WHITE-TAILED DEER. *J. Amer. Vet. Med. Ass.* 159(5): 605-610, 8 figs. 1 Sept. 1971. *WR 144: 77*

[Univ. Conn., Storrs.] Summary: Malignant catarrhal fever occurred in 3 white-tailed deer. Vasculitis with lymphoid infiltration was the typical lesion and occurred in the brain, kidneys, liver, heart, mesentery, lungs, skeletal muscle, urinary bladder, testes, and alimentary canal. Fibrinoid necrosis was a prominent feature of the vasculitis and served as an aid in differential diagnosis from mucosal disease and bluetongue.

MAMMALS--MARINE

Babenko, V. V., and R. M. Surkina. [SOME HYDRODYNAMIC FEATURES OF THE SWIMMING OF DOLPHINS.] *Bionika Resp. Mezhved Sb.* 3. p. 19-26. 1969. [From Biol. Abstr. 52(20), 1971, from Referat. Zh., Biol., 1970, no. 3I529. Transl. of Russian abstr.] *WR 144: 77*

Bass, J., and J. Ballard. EXPERIENCES WITH MARINE MAMMALS. *South African Ass. Marine Biol. Res.* 8: 47-48. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 77*

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Beloborodov, A. G. [*HALICHOERUS GRYPUS* FABRICIUS IN THE WHITE SEA.] *Priroda* (Moscow) 4: 99-100. Apr. 1971. [From J. Mammal. 52(4, suppl.), 1971. In Russian.] *WR 144: 77*

Beverley-Burton, Mary. [illegible]MINTHS FROM THE WEDDELL SEAL, *LEPTONYCHOTES WEDDELLI* (LESSON, 1826), IN THE ANTARCTIC. *Canadian J. Zool.* 49(1): 75-83. Jan. 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 77*

Boulva, Jean. OBSERVATIONS ON A COLONY OF WHELPING HARBOUR SEALS, *PHOCA VITULINA CONCOLOR*, ON SABLE ISLAND, NOVA SCOTIA. *J. Fisheries Res. Board Canada* 28(5): 755-759. May 1971. [From J. Mammal. 52(4, suppl.), 1971. In English with French summ.] *WR 144: 77*

Burns, John J., and Francis H. Fay. COMPARATIVE MORPHOLOGY OF THE SKULL OF THE RIBBON SEAL, *HISTRIOPHOCA FASCIATA*, WITH REMARKS ON SYSTEMATICS OF PHOCIDAE. *J. Zool.* (London) 161: 363-394, 3 figs. + 4 pls. 1970. *WR 144: 77*

[Alaska Dep. Fish & Game, Fairbanks.]

Bychkov, V. A. [AGE PECULIARITIES OF THE HAIR COVER OF FUR SEALS.] *Trans. IX Int. Congr. Game Biol.* p. 923-927. 1970. In Russian with English summ. *WR 144: 77*

[Central. Lab. Ochrani Prirodi, Moscow, USSR.]

Caldwell, David K., and Melba C. Caldwell. ECHOLOCATION-TYPE SIGNALS BY TWO DOLPHINS, GENUS *SOTALIA*. *Quart. J. Fla. Acad. Sci.* 33(2): 124-131. June 1970. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 77*

Caldwell, David K., Melba C. Caldwell, Warren F. Rathjen, and John R. Sullivan. CETACEANS FROM THE LESSER ANTILLEAN ISLAND OF ST. VINCENT. *U.S. Fish Wildl. Serv. Fish. Bull.* 69(2): 303-312, illus. 1971. [From Biol. Abstr. 52 (20), 1971.] *WR 144: 77*

[Fla. State Mus. Univ. Fla., Gainesville.] A preliminary list of cetaceans collected and observed during the course of a fishery for blackfish or pilot whales *(Globicephala)* in the waters of the Lesser Antillean island of St. Vincent is presented.

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[Fla. State Mus. Univ. Fla., Gainesville.]

Caldwell, Melba C., David K. Caldwell, and Nicolas R. Hall. AN EXPERIMENTAL DEMONSTRATION OF THE ABILITY OF AN ATLANTIC BOTTLENOSED DOLPHIN TO DISCRIMINATE BETWEEN PLAYBACKS OF RECORD WHISTLES OF CONSPECIFICS. *Proc. Seventh Ann. Conf. Biol. Sonar Diving Mammal.* 7: 141-158. 1970. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 78*

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[Calif. State Coll., Long Beach.]

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[Dep. Agr., P.O. Box 1140, Hastings, New Zealand.] *"Zalophus c. californianus."*

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[Alaska Dep. Fish & Game, Anchorage.] *"Phoca vitulina richardi."*

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Gaskin, D. E. COMPOSITION OF SCHOOLS OF SPERM WHALES *PHYSETER CATODON* LINN. EAST OF NEW ZEALAND. *New Zealand J. Marine Freshwater Res.* 4(4): 456-471. Dec. 1970. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 78*

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Gilmartin, William G., John F. Allen, and Sam H. Ridgway. VACCINATION OF PORPOISES *(TURSIOPS TRUNCATUS)* AGAINST *ERYSIPELOTHRIX RHUSIOPATHIAE* INFECTION. *J. Wildl. Dis.* 7(4): 292-295, 1 fig. Oct. 1971. *WR 144: 79*
[Naval Undersea Res. & Development Center, San Diego, Calif.]

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[Univ. Cambridge, Cambridge, England.]

Haley, Delphine. TWO-TON WHALE PUP AT SEA WORLD. *Pacific Search* 5(8): 9. May 1971. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 79*

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[Univ. Calif.-San Diego, La Jolla.]

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Hatler, David F. A CANADIAN SPECIMEN OF RISSO'S DOLPHIN. *Canadian Field Natur.* 85(2): 188-189. Apr.-June 1971. *WR 144: 79*
[Univ. British Columbia, Vancouver, British Columbia, Canada.] Abstract: Measurements and skeletal material were obtained from a Risso's dolphin [*Grampus griseus*] which drifted ashore in British Columbia. This is apparently the second recorded stranding and first complete specimen of this species in Canada.

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[U.S. Naval Air Sta., Seattle, Wash.] *Callorhinus ursinus* excretes most nitrogen as urea and handles creatine differently than man. Whether sea water as a source of metabolic water is more "available" to seals and other marine mammals than to man is still unresolved.--From summ.

Keyes, Mark C., Richard J. Wurtman, C. Arthur Elden, Chuan Chou, and Robert McGuire. SEASONAL FLUCTUATIONS OF HYDROXY-INDOLE LEVELS IN THE PINEAL GLAND OF THE NORTHERN FUR SEAL. *J. Wildl. Dis.* 7(4): 235. Oct. 1971. *WR 144: 79*
[U.S. Naval Air Sta., Seattle, Wash.] Abstract only.

McConnel, J. G. SEAL-HUNTING IN KEEWATIN. *Musk-Ox* (Saskatoon) 8: 23-26. 1971. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 80*

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[Armed Forces Inst. Pathol., Washington, D.C.] *"Tursiops truncatus."*

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[Armed Forces Inst. Pathol., Washington, D.C.]

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[Univ. Hawaii, Honolulu.]

Payne, Roger S., and Scott McVay. SONGS OF HUMPBACK WHALES. *Science* (Washington) 173(3997): 585-597, 11 figs. 13 Aug. 1971. *WR 144: 80*
[Rockefeller Univ., New York, N.Y.] Summary: Humpback whales *(Megaptera novaeangliae)* produce a series of beautiful and varied sounds for a period of 7 to 30 minutes and then repeat the same series with considerable precision. We call such a performance "singing" and each repeated series of sounds a "song." All prolonged sound patterns (recorded so far) of this species are in song form, and each individual adheres to its own song type. There seem to be several song types around which whales construct their songs, but individual variations are pronounced (there is only a very rough species-specific song pattern). Songs are repeated without any obvious pause between them; thus song sessions may continue for several hours. The sequence of themes in successive songs by the same individual is the same. Although the number of phrases per theme varies, no theme is ever completely omitted in our sample. Loud sounds in the ocean, for example dynamite blasts, do not seem to affect the whale's songs. The sex of the performer of any of the songs we have studied is unknown. The function of the songs is unknown.

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[East Carolina Univ., Greenville, N.C.]

Penner, R. H., and A. E. Murchison. EXPERIMENTALLY DEMONSTRATED ECHOLOCATION IN THE AMAZON RIVER PORPOISE, *INIA GEOFFRENSIS* (BLAINVILLE). *Proc. Seventh Ann. Conf. Biol. Sonar Diving Mammal.* 7: 17-38. 1970. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 80*

Perry, Mary Lou, and Donald J. Forrester. *DIPETALONEMA ODENDHALI* (NEMATODA: FILARIOIDEA) FROM THE NORTHERN FUR SEAL, WITH A DESCRIPTION OF THE MICROFILARIA. *J. Parasitol.* 57(3): 469-472, 4 figs. June 1971. *WR 144: 81*
[Univ. Calif., Davis.] Abstract: *Dipetalonema odendhali* Perry, 1967, is reported from the northern fur seal *(Callorhinus ursinus)* from St. Paul Island (Pribilof Islands), Alaska, and compared with specimens taken from the California sea lion *(Zalophus c. californianus)*. Microfilariae are described. Samples of blood were taken from 130 fur seals, including twelve, 8-week-old pups. Microfilariae were not found in samples from the pups, but were present in 83% of 118 samples from fur seals over 3 years of age.

Pershin, S. V. [THE HYDRODYNAMIC CHARACTERIZATION OF CETACEANS AND ESTABLISHING STANDARD SWIMMING SPEEDS OF DOLPHINS UNDER NATURAL CONDITIONS AND IN CAPTIVITY.] *Bionika Resp. Mezhved Sb.* 3. p. 5-12. 1969. [From Biol. Abstr. 52(20), 1971, from Referat. Zh., Biol., 1970, no. 3I528. Transl. of Russian abstr.] *WR 144: 81*

Poulter, Thomas C. ULTRASONIC FREQUENCIES RECORDED FROM THREE CAPTIVE BLIND DOLPHINS *(PLATANISTA GANGETICA)*. *Proc. Seventh Ann. Conf. Biol. Sonar Diving Mammal.* 7: 13-14. 1970. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 81*

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[Canadian Wildl. Serv., Ottawa, Ontario, Canada.]

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Van Gelder, Richard G. WHALE ON MY BACK. *Curator* 13(2): 95-119. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 81*

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[Univ. Calif., Berkeley.] Abstract: A *Leptospira* species is suspected of being the etiological agent in a recent epizootic among California sea lions. The disease was confined to subadult males of the species *Zalophus c. californianus*.

White, Fred N., and Daniel K. Odell. THERMOREGULATORY BEHAVIOR OF THE NORTHERN ELEPHANT SEAL, *MIROUNGA ANGUSTIROSTRIS*. *J. Mammal.* 52(4): 758-774, 9 figs. Nov. 1971. *WR 144: 81*
[Univ. Calif., Los Angeles.] Observations on a colony of northern elephant seals on Guadalupe Island, México, revealed that group patterns of sand flipping and migration to the surf were correlated with weather conditions. These behaviors were interrupted by a partial solar eclipse or by intermittent clouds. The occurrence of both behavioral patterns was essentially absent on overcast or

rainy days. Sand flipping and wetting with water both create a favorable gradient for heat loss as shown by comparisons of temperatures at the skin surface. Wetting with sea water is the more effective in involving the largest surface for evaporative cooling. On a clear day the behavioral sequence is typically: 1) exposure of the most reflective surface (belly up); 2) prone position followed by flipping of moist sand to the dorsum; and 3) migration to the edge of the surf where wetting and evaporative cooling occur. Elephant seals seem physiologically adapted to sea temperatures, their repertoire of purely physiological thermoregulatory mechanisms being insufficient to meet the thermal loads often encountered on land.--From abstr.

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[Univ. New South Wales, Sydney, N.S.W., Australia.] Investigatory behavior of 30 animals of 6 spp. to novel objects differing in shape, texture and color.--From summ.

Sale, John B. A NEW FOUR-TOED MONGOOSE FROM KENYA, *HEBOGALE CRASSICAUDA NIGRESCENS* SSP. NOV. *J. East Afr. Natur. Hist. Soc. Nat. Mus.* 28(1): 10-15. July 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 84*

Taverne, M. A. M., and M. F. Bakker-Slotboom. OBSERVATIONS ON THE DELIVERED PLACENTA AND FETAL MEMBRANES OF THE AARDVARK, *ORYCTEROPUS AFER* (PALLAS, 1766). *Bijdr. Dierk.* (Amsterdam) 40(2): 154-162. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 84*

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BIRDS--GENERAL

Bartonek, James C., James G. King, and Harvey K. Nelson. PROBLEMS CONFRONTING MIGRATORY BIRDS IN ALASKA. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 345-361, 4 figs. 1971. *WR 144: 84*
[Bur. Sport Fisheries & Wildl., Fairbanks, Alaska.]

Courtney, John, and S. Marchant. BREEDING DETAILS OF SOME COMMON BIRDS IN SOUTH-EASTERN AUSTRALIA. *Emu* 71(3): 121-133. July 1971. *WR 144: 84*
Details of laying routine, clutch-size, incubation and nestling periods for eighteen species breeding in southeastern Australia are given. The data are not complete for any species, but are enough to outline several problems of breeding biology in Australia.

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[Univ. Calif., San Diego.]

Kovshar', A. F. [SIZE OF CLUTCHES OF PASSERIFORMES IN TIEN-SHAN.] *Zool. Zh.* 50(4): 553-560. 1971. [From Biol. Abstr. 52(21), 1971. In Russian with English summ.] *WR 144: 84*
[Inst. Zool., Acad. Sci. Kaz. SSR, Alma-Ata, USSR.] An analysis of the size of clutches (1518 nests) in 62 spp. of Passeriformes from different mountain ridges of Tien-Shan (mainly from Talassky and Zailiisky Alatau) showed that out of 27 widespread species a tendency of lowering fecundity in the mountains was observed in 12 spp.

Niethammer, Guenther. ZUR TAXONOMIE EUROPAEISCHER, IN NEUSEELAND EINGEBUERGERTER VOEGEL. [ON THE TAXONOMY OF EUROPEAN BIRDS, INTRODUCED TO NEW ZEALAND.] *J. Ornithol.* 112(2): 202-226, illus. 1971. [From Biol. Abstr. 52(22), 1971. In German with English summ.] *WR 144: 85*
[Adenauerallee 162, Bonn, Germany.]

Rand, Austin L. BIRDS OF NORTH AMERICA. *Doubleday & Company, Inc.* (New York). 256 p., illus., 6.25 x 8.75 in. 1971. Price $9.95. *WR 144: 85*
A reference to 600 birds regularly occurring in the U.S. and Canada. "It is both a guide to the identification and range of all familiar American species and a first-hand account of bird behavior, including courting, mating, migration, feeding habits, flight, and present status." With 119 photographs, 66 in color.

BIRDS--TECHNIQUES

Bull, P. C. BIRD DISTRIBUTION--A NEW MAPPING SCHEME. *Notornis* 17(3): 231-235, 2 figs. Sept. 1970. *WR 144: 85*
Results are reported of a two-month trial of an Ornithological Society of New Zealand scheme for recording the distribution of birds by compiling species lists from as many as possible of the 10,000 yard squares of the National Grid. Lists were received from 15% of the squares, and maps show the distribution of these.--From auth. abstr.

Caithness, T. A., and G. R. Williams. PROTECTING BIRDS FROM POISONED BAITS. *New Zealand J. Agr.* 4-page reprint, illus. June 1971. *WR 144: 85*
[Dep. Internal Affairs, Wellington, New Zealand.] Use of green dye to prevent accidental bird kills in a rabbit destruction program.

Davis, L. Irby. BIRDING WITH SOUND. *Birding* 3(4): 123-150, illus. July-Aug. 1971. *WR 144: 85*
[Austin, Tex.] Detailed discussion of bird vocalization including terms and definitions, methods, analysis and taxonomy.

Eddinger, C. Robert. HAND-RAISING HAWAII'S ENDEMIC HONEYCREEPERS. *Aviculture Mag.* 77(4): 113-114 + 1 pl. July-Aug. 1971. *WR 144: 85*
[Univ. Hawaii, Honolulu.] "Drepanididae."

Galaka, B. A., and E. D. Krainev. [METHODS AND RESULTS OF ESTIMATING THE NUMBERS OF FEATHERED GAME SHOT IN THE UKRAINE.] *Trans. IX Int. Congr. Game Biol.* p. 419-420. 1970. In Russian with English summ. *WR 144: 85*
[Inst. Zool. Akad. Nauk USSR, Kiev, USSR.]

Haneda, Kenzo, Toshiko Horiuchi, Norio Kozakai, Hideo Sato, Koshi Noda, and Shinsaku Hiroe. [ON THE UTILIZATION OF THE NEST BOXES IN THE GARDEN OF INSTITUTE OF NATURAL EDUCATION OF SHIGA HEIGHTS IN 1969.] *Bull. Inst. Natur. Educ. Shiga Heights* 8: 87-93, illus. 1969. [From Biol. Abstr. 52(22), 1971. In Japanese with English summ.] *WR 144: 85*
[Shinshu Univ., Matsumoto, Japan.] Studies of utilization of nest boxes by song birds. Of 106 boxes 61 (59%) were used.

Nikultsev, A. P. [FORMULA FOR DETERMINING THE POPULATION DENSITY OF BIRDS USED AT TRANSECT COUNTS.] *Trans. IX Int. Congr. Game Biol.* p. 426-431, 2 figs. 1970. In Russian with English summ. *WR 144: 85*

Seber, G. A. F. ESTIMATING AGE-SPECIFIC SURVIVAL RATES FROM BIRD-BAND RETURNS WHEN THE REPORTING RATE IS CONSTANT. *Biometrika* 58(3): 491-497. Dec. 1971. *WR 144: 85*
[Otago Univ., New Zealand.] Summary: A probability model consisting of a product of multinomial distributions is derived for a bird-banding experiment in which a new batch of nestlings is banded and released at the beginning of each year and the bands from the dead birds are returned by observers in subsequent

years. The annual reporting probability is assumed to be the same for all birds and to remain constant from year to year, while the probability of survival is assumed to depend on the age of the bird rather than on the calendar year. By considering the probability distribution of band returns conditional on the total numbers of returns from each release, explicit maximum likelihood estimates of the survival probabilities are obtained together with their asymptotic variance-covariance matrix. A goodness-of-fit test of the model is outlined and the theory is demonstrated by a worked example.

van Soest, R. W. M., and W. L. van Utrecht. THE LAYERED STRUCTURE OF BONES OF BIRDS AS A POSSIBLE INDICATION OF AGE. *Bijdr. Diark.* 41(4): 61-66, illus. 1971. [From Biol. Abstr. 52(22), 1971.] *WR 144: 86*
[Univ. Amsterdam, Amsterdam, Netherlands.]

Williamson, Weaver M., and W. C. Russell. PREVENTION OF FLIGHT IN OLDER CAPTIVE BIRDS. *J. Amer. Vet. Med. Ass.* 159(5): 596-598. 1 Sept. 1971. *WR 144: 86*
[Chicago Zool. Park, Brookfield, Ill.] Description of pinioning, removing the distal parts of the wing, including the carpal, metacarpal, and phalangeal bones, to limit the flight of a bird.

BIRDS--MORPHOLOGY & PHYSIOLOGY

Banks, Richard C. ON ECOTYPIC VARIATION IN BIRDS. *Evolution* 24(4): 829-831. 29 Dec. 1970. *WR 144: 86*
[Nat. Mus. Natur. Hist., Washington, D.C.] A correlation between tarsal length and feeding behavior in sparrows either interspecifically or intraspecifically has not been demonstrated.

Bernstein, Marvin H. CUTANEOUS WATER LOSS IN SMALL BIRDS. *Condor* 73(4): 468-469. Winter 1971. *WR 144: 86*
[Duke Univ., Durham, N.C.]

Binkley, Sue, Edward Kluth, and Michael Menaker. PINEAL FUNCTION IN SPARROWS: CIRCADIAN RHYTHMS AND BODY TEMPERATURE. *Science* 174(4006): 311-314, 5 figs. 15 Oct. 1971. *WR 144: 86*
[Univ. Tex., Austin.] Abstract: Deep body temperature of the house sparrow, *Passer domesticus*, was monitored continuously by radio telemetry. Pinealectomy abolished the normal circadian rhythm of body temperature in constant darkness, and significantly altered the amplitude of body temperature rhythms entrained to light cycles. The body temperature minima of pinealectomized birds never fell as low as those of unoperated birds regardless of the light conditions; the temperature maxima of both normal and pinealectomized birds were higher in light than in darkness. In sparrows the pineal organ is essential to the normal function of the biological clock controlling both activity and body temperature rhythms and may be directly involved in thermoregulation.

Gavrilov, E. I. [MOULT OF PRIMARY FEATHERS IN SWALLOWS DURING THE AUTUMN FLIGHT.] *Zool. Zh.* 50(4): 599-602. 1971. [From Biol. Abstr. 52(21), 1971. In Russian with English summ.] *WR 144: 86*
[Inst. Zool., Acad. Sci. Kaz. SSR, Alma-Ata, USSR.] In some swallow migrants the feather molt begins during the autumn flight near nesting places.

Lasiewski, Robert C., Marvin H. Bernstein, and Robert D. Ohmart. CUTANEOUS WATER LOSS IN THE ROADRUNNER AND POOR-WILL. *Condor* 73(4): 470-472. Winter 1971. *WR 144: 86*
[Bernstein: Duke Univ., Durham, N.C.]

Middleton, A. L. A. THE GONADAL CYCLE OF THE GOLDFINCH IN SOUTH-EASTERN AUSTRALIA. *Emu* 71(4): 159-166, 2 figs. Oct. 1971. *WR 144: 86*
[Univ. Guelph, Guelph, Ontario, Canada.] *"Carduela carduela."*

Morton, Eugene S. NEST PREDATION AFFECTING THE BREEDING SEASON OF THE CLAY-COLORED ROBIN, A TROPICAL SONG BIRD. *Science* (Washington) 171(3974): 920-921. 5 Mar. 1971. *WR 144: 87*

[Smithsonian Tropical Res. Inst., Box 2072, Balboa, Canal Zone.] Abstract: Predation seems more important than food availability in determining the reproductive period of the clay-colored robin *Turdus grayi*. It breeds in the dry season when food resources are low. The rainy season brings more food but breeding stops, possibly because of greatly increased nest predation.

Ohmart, Robert D., and Robert C. Lasiewski. ROADRUNNERS: ENERGY CONSERVATION BY HYPOTHERMIA AND ABSORPTION OF SUNLIGHT. *Science* (Washington) 172(3978): 67-69, 2 figs. 2 Apr. 1971. *WR 144: 87*

[Univ. Calif., Davis.] Abstract: Roadrunners sunning in artificial sunlight consume oxygen at standard (basal) levels at ambient temperatures as low as 9.0°C. Energy savings of sunning roadrunners averaged 551 calories per hour. In the dark, birds may undergo hypothermia. Hypothermic roadrunners can elevate their body temperatures to normal levels by sunning, at reduced metabolic cost.

BIRDS--BEHAVIOR

Alcock, John. INTERSPECIFIC DIFFERENCES IN AVIAN FEEDING BEHAVIOR AND THE EVOLUTION OF BATESIAN MIMICRY. *Behaviour* 40(1-2): 1-9, 1 fig. 1971. In English with German summ. *WR 144: 87*

[Univ. Wash., Seattle.] An experiment on interspecific differences in the response of bird predators to an artificial Batesian mimic/model complex. Black-capped chickadees *(Parus atricapillus)* and white-crowned sparrows *(Zonotrichia leucophrys)* were offered a series of 24 pairs of models and mimics after an initial presentation of the emetic model (a half mealworm adulterated with quinine sulphate and with a black dot painted on it). Chickadees attacked many mimics (unaltered half mealworms) and a few models. White-crowned sparrows attacked few mimics and almost no models.--From summ.

Ando, Shigeru, and Akio Ogasawara. [TELEMETRY OF THE BEHAVIOR OF PALE THRUSH *(TURDUS PALLIDUS).*] *Japanese J. Ecol.* 20(4): 137-144, illus. 1970. [From Biol. Abstr. 52(22), 1971. In Japanese with English summ.] *WR 144: 87*

[Univ. Nagoya, Nagoya, Japan.]

Emlen, Stephen T. THE ROLE OF SONG IN INDIVIDUAL RECOGNITION IN THE INDIGO BUNTING. *Z. Tierpsychol.* 28(3): 241-246, illus. 1971. [From Biol. Abstr. 52 (21), 1971. In English with German summ.] *WR 144: 87*

[Cornell Univ., Ithaca, N.Y.] Terrestrial male indigo buntings *(Passerina cyanea)* respond aggressively to playback of conspecific songs.

Formozov, A. N. [INTERRELATIONS OF WATERFOWL, WADERS, GULLS AND SOME BIRDS OF PREY IN THE BREEDING GROUNDS IN THE OPEN LANDSCAPES OF THE USSR.] *Trans. IX Int. Congr. Game Biol.* p. 483-487. 1970. In Russian with English summ. *WR 144: 87*

[Inst. Geogr. Akad. Nauk USSR, Moscow, USSR.]

Friedmann, Herbert. FURTHER INFORMATION ON THE BREEDING BIOLOGY OF THE HONEY GUIDES. *Los Angeles County Mus. Contrib. Sci.* 205: 1-5. 1970. [From Biol. Abstr. 52(22), 1971.] *WR 144: 87*

[Los Angeles County Mus. Natur. Hist., Los Angeles, Calif.] The reproductive biology of 4 of the African species of honey guides of the genus *Indicator (I. maculatus, I. indicator, I. minor, I. conirostris)* are presented with comments for their proper evaluation and correlation with earlier information.

Gibson, Flash. BEHAVIORAL PATTERNS AND THEIR TEMPORAL ORGANIZATION IN BREEDING AMERICAN AVOCETS. *Ph.D. thesis, Oreg. State Univ.* 181 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(4), 1971.] *WR 144: 88*
To be successful a bird must apportion its behavior in time so that it may obtain sufficient energy for maintenance activities and for activities such as migration and reproduction. The time budget of American avocets *(Recurvirostra americana)* for action patterns and displays of breeding is described.

Haneda, Kenzo, and Yohko Horiuchi. [A STUDY OF THE LIFE HISTORY OF *ERITHACUS CYANE*: I. CHICK FOODS AND FLEDGING.] *Bull. Inst. Natur. Educ. Shiga Heights* 8. p. 79-86, illus. 1969. [From Biol. Abstr. 52(23), 1971. In Japanese with English summ.] *WR 144: 88*
[Shinshu Univ., Matsumoto, Japan.]

Haneda, Kenzo, and Takeshi Okabe. [THE LIFE HISTORY OF *CETTIA DIPHONE*: I. BREEDING ECOLOGY.] *Misc. Rep. Yamashina's Inst. Ornithol.* 6(1/2): 131-140, illus. 1970. [From Biol. Abstr. 52(22), 1971. In Japanese with English summ.] *WR 144: 88*
[Shinshu Univ., Nagano, Japan.] Eggs, clutch size, incubation period, and the home range of the male during the breeding period.

Harrison, C. J. O. THE SUNBATHING OF THE ROADRUNNER. *Avicult. Mag.* 77(4): 128 + 1 pl. July-Aug. 1971. *WR 144: 88*
[Perivale, Middlesex, England.] Description of sunbathing behavior of *Geococcyx californianus.*

Hijikata, Yasuji. [BREEDING ECOLOGY OF JAPANESE GREAT TIT *(PARUS MAJOR MINOR)* IN A NEST BOX.] *Japanese J. Ecol.* 20(3): 110-114, illus. 1970. [From Biol. Abstr. 52(22), 1971. In Japanese with English summ.] *WR 144: 88*
[For. Exp. Sta., Sendai, Japan.]

Hoy, Gunnar. UEBER BRUTBIOLOGIE UND EIER EINIGER VOEGEL AUS NORDWEST-ARGENTINIEN: II. [ON THE BREEDING BIOLOGY AND EGGS OF SOME BIRDS FROM NORTH-WESTERN ARGENTINA: II.] *J. Ornithol.* 112(2): 158-163, illus. 1971. [From Biol. Abstr. 52(22), 1971. In German.] *WR 144: 88*
[España 1634, Salta, Argentina.]

Kondla, Norbert G., and Harold W. Pinel. SOME NOTEWORTHY RECORDS OF COWBIRD PARASITISM IN SOUTHERN ALBERTA. *Blue Jay* 29(4): 204-207. Dec. 1971. *WR 144: 88*
[4320 Bowness Rd., Calgary, Alberta, Canada.]

Lemon, Robert E. ANALYSIS OF SONG OF RED-EYED VIREOS. *Canadian J. Zool.* 49 (6): 847-854, illus. 1971. [From Biol. Abstr. 52(23), 1971.] *WR 144: 88*
[McGill Univ., Montreal, Quebec, Canada.] *"Vireo olivaceous."*

Ogasawara, Ko. [ANALYSIS OF MIXED FLOCKS OF TITS IN THE BOTANICAL GARDEN OF TOHOKU UNIVERSITY, SENDAI: II. FORAGING LAYERS BY SPECIES AND THEIR INTERRE-LATIONS WITHIN THE MIXED FLOCK.] *Misc. Rep. Yamashina's Inst. Ornithol.* 6(1/2): 170-178, illus. 1970. [From Biol. Abstr. 52(24), 1971. In Japanese with English summ.] *WR 144: 88*
[Univ. Akita, Japan.]

Ogasawara, Ko. [ANALYSIS OF MIXED FLOCKS OF TITS IN THE BOTANICAL GARDEN OF TOHOKU UNIVERSITY, SENDAI: III. FLOCK BEHAVIOR AND INTERSPECIFIC RELATIONS WITHIN THE MIXED FLOCK.] *Misc. Rep. Yamashina's Inst. Ornithol.* 6(1/2): 179-187, illus. 1970. [From Biol. Abstr. 52(24), 1971. In Japanese with English summ.] *WR 144: 88*
[Univ. Akita, Japan.]

Payne, R. B. DUETTING AND CHORUS SINGING IN AFRICAN BIRDS. *Ostrich*, suppl. no. 9. p. 125-146, 15 figs., 3 pls. July 1971. *WR 144: 89*
[Univ. Mich., Ann Arbor.] Duetting of 16 species of African birds was recorded and analyzed on an audiospectrograph for comparison of the temporal pattern and synchrony of the calls of the members of each pair.--From summ.

Recher, H. F. SHARING OF HABITAT BY THREE CONGENERIC HONEYEATERS. *Emu* 71 (4): 147-152, 2 figs. Oct. 1971. *WR 144: 89*
[Australian Mus., 6-8 College St., South Sydney, NSW, Australia.] *"Phylidonyris nigra, P. novaehollandiae,* and *P. melanops."*

Roosa, Dean M. HOMING INSTINCT IN ROBINS *(TURDUS MIGRATORIUS). Iowa Bird Life* 41(3): 67-76, 5 figs. Sept. 1971. *WR 144: 89*
[Goldfield, Iowa.] To investigate their homing instinct, robins were released at various compass directions under varying weather conditions at different times of day, in various habitats and at two stages of the nesting cycle. Stage of the nesting cycle, weather, and homing distance were factors. Birds homed equally well from different directions and habitats.

Ryder, John P. SPRING BIRD PHENOLOGY AT KARRAK LAKE, NORTHWEST TERRITORIES. *Canadian Field Natur.* 85(2): 181-183. Apr.-June 1971. *WR 144: 89*
[Lakehead Univ., Thunder Bay P, Ontario, Canada.] Abstract: Arrival dates and status of 39 bird species during the summers of 1966, 1967, and 1968 are recorded from Karrak Lake, Northwest Territories, the location of the largest known nesting colony of Ross' Geese and a rarely visited area of the Canadian Arctic.

Sasvári, L. INVESTIGATIONS ON THE FORM AND MEANING OF THE VOCALIZATION OF THE GREAT AND BLUE TITS. *Acta Zool. Acad. Sci. Hungary* 17(1/2): 107-117, illus. 1971. [From Biol. Abstr. 52(24), 1971. In English with Russian summ.] *WR 144: 89*
[Berzenczei u. 26, Budapest, Hungary.] By sound microscopy method, the geneologic relations between the attracting call and alarm call of the blue tit *(Parus caeruleus)* was compared with communication calls of the great tit *(P. major).*

Sasvári, Lajos, and Szoke Zsuzsa. FORMA ÉS JELENTÉS A KÉKCINEGE HANGADÁSÁBAN. [FORM AND MEANING IN THE CALLS OF BLUE TIT.] *Allattani Kozlem* 57(1-4): 131-137, illus. 1970. [From Biol. Abstr. 52(23), 1971. In Hungarian with English summ.] *WR 144: 89*
[Berzenczei u. 26, Budapest, Hungary.]

Scott, Lorne. MALE EASTERN BLUEBIRD ASSISTS FEMALE MOUNTAIN BLUEBIRD IN RAISING YOUNG. *Blue Jay* 29(3): 126-127. Sept. 1971. *WR 144: 89*
[Indian Head, Saskatchewan, Canada.]

Steyn, Peter. NOTES ON THE BREEDING BIOLOGY OF THE FRECKLED NIGHTJAR. *Ostrich*, suppl. no. 9. p. 179-188, 3 pls. July 1971. *WR 144: 89*
[P.O. Box 9199, Hillside, Bulawayo, Rhodesia.] Summary: Attention is drawn to the extreme paucity of knowledge about the breeding biology of Southern African nightjars [*Caprimulgus tristigma*]. The observations deal mainly with a single nest from the time it was found with a fresh egg until the young were eighteen days old (when they died during a cold snap). The eggs are described and attention is drawn to previous erroneous descriptions. Details are given of behaviour during the incubation and fledging periods. A distraction display, which took the form of injury feigning, was a regular feature. The development of the young is outlined.

Thiollay, Jean-Marc. L'EXPLOITATION DES FEUX DE BROUSSE PAR LES OISEAUX EN AFRIQUE OCCIDENTALE. [THE EXPLOITATION OF BRUSH FIRES BY BIRDS IN WESTERN AFRICA.] *Alauda* 39(1): 54-72. 1971. [From Biol. Abstr. 52(22), 1971. In French with English summ.] *WR 144: 89*
[E.N.S. Lab. Zool., 46 rue d'Ulm, Paris, France.]

Tramontano, John Philip. SUMMER FORAGING BEHAVIOR OF SYMPATRIC ARIZONA GRASSLAND SPARROWS. *Ph.D. thesis, Univ. Ariz.* 82 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(6), 1971.] *WR 144: 90*
The simultaneous utilization of a savannah-grassland by six species of emberizid finches during the breeding season was studied. Each species differed in its combination of preferred habitat, foraging behavior, diet, and nest site selection.

Willson, Mary F. A NOTE ON FORAGING OVERLAP IN WINTER BIRDS OF DECIDUOUS WOODS. *Condor* 73(4): 480-481, 1 fig. Winter 1971. *WR 144: 90*
[Univ. Ill., Champaign.]

BIRDS--MIGRATION & BANDING REPORTS

Blokpoel, H. AN ATTEMPT TO FORECAST THE INTENSITY OF NOCTURNAL FALL MIGRATION. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 287-298, 3 figs. 1970. In English with French summ. *WR 144: 90*
[Dep. Indian Affairs & Northern Dev., Saskatoon, Saskatchewan, Canada.] This paper presents previously unpublished work and describes a method for forecasting the intensity of nocturnal fall migration over the area around Cold Lake, Alberta. It discusses the results obtained during the test period, 16 September to 16 October 1968.--From intro.

Blokpoel, H. A PRELIMINARY STUDY ON HEIGHT AND DENSITY OF NOCTURNAL FALL MIGRATION. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 335-348, 1 fig. 1970. In English with French summ. *WR 144: 90*
[Dep. Indian Affairs & Northern Dev., Saskatoon, Saskatchewan, Canada.] The height and density of nocturnal migration during fall 1968 over the area around Canadian Forces Base "Cold Lake", Alberta, was recorded by filming an A-scope of a vertically aimed M33C track radar. The radar was located at the southwest shore of Primrose Lake (54°49'N latitude, 110°02'W longitude) about 30 miles north of CFB Cold Lake. The radar detected single birds flying above 1,200 ft. The paper deals with the results for 15 nights which were either completely clear or clear up to 12,000 ft.--From summ.

Dow, Douglas D., and D. M. Scott. DISPERSAL AND RANGE EXPANSION BY THE CARDINAL: AN ANALYSIS OF BANDING RECORDS. *Canadian J. Zool.* 49(2): 185-198, illus. 1971. [From Biol. Abstr. 52(13), 1971.] *WR 144: 90*
[Univ. Queensland, St. Lucia, Queensland, Australia.] *"Richmondena cardinalis."*

Salomonsen, Finn. RECOVERIES IN GREENLAND OF BIRDS RINGED ABROAD (LIST). *Medd. Grønland* 191(2): 1-52. 1971. [From Biol. Abstr. 52(22), 1971.] *WR 144: 90*

Spellerberg, Ian F. ARRIVAL AND DEPARTURE OF BIRDS AT McMURDO SOUND, ANTARCTICA. *Emu* 71(4): 167-171, 1 fig. Oct. 1971. *WR 144: 90*
[La Trobe Univ., Bundoora, Victoria, Australia.] The timing of breeding and molt is adjusted to the climate and resources of food. Breeding behavior of some species is synchronized so that there is a shorter breeding period at this latitude than to the north.--From summ.

Warden, M. P., and B. A. Wyndham. MEASUREMENTS OF RADAR ECHOES FROM MIGRATING BIRDS. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 491-497, 6 figs. 1970. *WR 144: 90*
[Royal Radar Establishment, Min. Technol., St. Andrews Road, Malvern, England.] "Using a data logging equipment which gives a paper tape output, each word of which represents the digitized value of the amplitude of a radar echo, a statistical study of the signals received during periods in the migratory seasons was made. The results are expressed in the form of probability distributions of the radar cross-section in decibels with respect to 1 m^2 and maps of the average cross-section over an extended arc at constant range as a function of time."

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Alcala, Angel C., and Warlito M. Sanguila. THE BIRDS OF SMALL ISLANDS OFF THE EASTERN COAST OF PANAY (PHILIPPINES). *Silliman J.* 16(4): 375-383, illus. 1969. [From Biol. Abstr. 52(20), 1971.] *WR 144: 91*
[Silliman Univ., Dumaguete City, Philippines.]

Bequaert, M. BIJDRAGE TOT DE KENNIS VAN DE AVIFAUNA VAN DE BINNENHAVEN VAN BRUGGE MET ZIJN OMGEVING IN 1960-1969. [CONTRIBUTION TO THE KNOWLEDGE OF THE AVIFAUNA OF THE INNER HARBOR OF BRUGGE (BELGIUM) AND ITS ENVIRONMENT IN 1960-1969.] *Biol. Jaarb.* 38: 64-94. 1970. [From Biol. Abstr. 52(20, 1971. In Dutch.] *WR 144: 91*

Bezzel, Einhard. GROBE ANALYSE DER VERBREITUNG EINIGER BRUTVOEGEL IN DEN BAYERISCHEN ALPEN UND IHREM VORLAND. [GROSS ANALYSIS OF THE DISTRIBUTION OF SOME BREEDING BIRDS IN THE BAVARIAN ALPS AND ITS FORELAND.] *Anz. Ornithol. Ges. Bayern* 10(1): 7-37, illus. 1971. [From Biol. Abstr. 52(19), 1971. In German with English summ.] *WR 144: 91*
[81 Garmisch-Partenkirchen, Gsteigstr. 43, Munich, Germany.]

Bianchi, Eugenio, Luciano Martire, and Ausilia Bianchi. GLI UCCELLI DELLA PROVINCIA DI VARESE (LOMBARDIA). [THE BIRDS OF THE PROVINCE OF VARESE (LOMBARDY).] *Riv. Ital. Ornitol.* 40(3/4): 389-432. 1970. [From Biol. Abstr. 52(19), 1971. In Italian.] *WR 144: 91*
In this portion of a continued article, the families of Tetraonidae, Phasianidae, Balaricidae, Rallidae, Otididae, Charadriidae, Scolopacidae, Glareolidae, Stercorariidae and Laridae, with the species belonging to them are described.

Bochénski, Zygmunt. PTAKI BABIEJ GÓRY. [BIRDS OF BABIA GÓRA MOUNTAIN.] *Acta Zool. Cracov.* 15(1): 1-59, illus. 1970. [From Biol. Abstr. 52(22), 1971. In Polish with Russian and English summ.] *WR 144: 91*
[Zokl. Zool. Syst. Dosw., Pol. Akad. Nauk, Cracow, Poland.] Ecology, behavior and distribution of a total of 108 bird spp., of which 78 spp. nest in the areas studied, are discussed.

Deetjen, Hans. NOTES ORNITHOLOGIQUES DU YÉMEN. [ORNITHOLOGICAL REPORTS ON YEMEN.] *Alauda* 39(1): 43-53. 1971. [From Biol. Abstr. 52(22), 1971. In French.] *WR 144: 91*
[Karl-Leisner-St. 1, Bonn-Duisdorf, Germany.]

Denisova, M. N., and Z. V. Artamonova. [CHARACTERISTICS OF GROWTH OF PASSERIFORMES IN THE POLAR ZONE WITH RESPECT TO SPREADING OF SPECIES.] *Zool. Zh.* 50 (5): 741-750, illus. 1971. [From Biol. Abstr. 52(24), 1971. In Russian with English summ.] *WR 144: 91*
[N.K. Krupskoi Mosc., Pedagog. Inst., Moscow, USSR.]

Diamond, Jared M. BIRD RECORDS FROM WEST NEW BRITAIN. *Condor* 73(4): 481-483. Winter 1971. *WR 144: 91*
[UCLA Med. Center, Los Angeles, Calif.] Records of birds from New Britain, Bismarck Archipelago.

Dittberner, Hartmut, and Winfried Dittberner. DIE VOGELWELT DES RUEDERSDORFER RIESELFELDES AM OSTRAND BERLINS. [THE BIRDS OF THE IRRIGATED (SEWAGE) FIELD OF RUEDERSDORF ON THE EASTERN BORDER OF BERLIN.] *Milu* 2(6): 495-618, illus. 1969. [From Biol. Abstr. 52(21), 1971.] *WR 144: 91*
The origin, geology, topography, apparatus for sewage preparation, vegetation, characteristics of the sewage and chemical and biological conditions of the Ruedersdorf sewage fields near Berlin are described. A total of 205 species of birds were sighted in this area (63 breeding species, 142 guests). These species are listed with data on their occurrence.

Ehrhardt, Jean P. CENSUS OF THE BIRDS OF CLIPPERTON ISLAND, 1968. *Condor* 73(4): 476-480, 1 fig. Winter 1971. *WR 144: 91*
[Mus. d'Hist. Natur., Paris, France.]

Erard, Christian, and Robert-Daniel Etchecopar. CONTRIBUTION À L'ÉTUDE DES OISEAUX D'IRAN (RÉSULTATS DE LA MISSION ETCHECOPAR 1967). [CONTRIBUTION TO THE STUDY OF THE BIRDS OF IRAN (RESULTS OF THE ETCHECOPAR MISSION 1967).] *Mem. Mus. Nat. Hist. Natur. Ser. A Zool.* 66: 3-146, illus. 1970. [From Biol. Abstr. 52 (23), 1971. In French.] *WR 144: 92*

Erskine, Anthony J. BIRD COMMUNITIES IN AND AROUND CAPE BRETON WETLANDS. *Canadian Field Natur.* 85(2): 129-140, 5 figs. Apr.-June 1971. *WR 144: 92*
[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Three communities of standing water areas and one of flowing waters are distinguished and characterized, while two more (not studied) are mentioned. Most land birds detected belong to grassland or forest communities adjoining the wetlands; birds of these habitats are summarized but not discussed in detail.--From abstr.

Friedmann, Herbert, and John G. Williams. THE BIRDS OF THE KALINZU FOREST, SOUTHWESTERN ANKOLE, UGANDA. *Los Angeles County Mus. Contrib. Sci.* 195. p. 1-27, illus. 1970. [From Biol. Abstr. 52(21), 1971.] *WR 144: 92*
[Los Angeles County Mus. Natur. Hist., Los Angeles, Calif.]

Friedmann, Herbert, and John G. Williams. ADDITIONS TO THE KNOWN AVIFAUNA OF THE BUGOMA, KIRALE AND IMPENETRABLE FORESTS, WEST UGANDA. *Los Angeles County Mus. Contrib. Sci.* 198. p. 1-20. 1970. [From Biol. Abstr. 52(21), 1971.] *WR 144: 92*
[Los Angeles County Mus. Natur. Hist., Los Angeles, Calif.] *"Francolinus nobilus* and *Columba malherbii iriditorques."*

Friedmann, Herbert, and John G. Williams. THE BIRDS OF THE LOWLANDS OF BWAMBA, TORO PROVINCE, UGANDA. *Los Angeles County Mus. Contrib. Sci.* 211: 1-70. 1971. [From Biol. Abstr. 52(19), 1971.] *WR 144: 92*
[Los Angeles County Mus. Natur. Hist., Los Angeles, Calif.]

Haneda, Kenzo, Hiroshi Mitsuishi, and Toru Nakamura. [ECOLOGICAL STUDY OF THE BIRD COMMUNITY IN OTANOMOSU PLATEAU, SHIGA HEIGHTS IN 1969.] *Bull. Inst. Natur. Educ. Shiga Heights* 8: 27-36, illus. 1969. [From Biol. Abstr. 52(22), 1971. In Japanese with English summ.] *WR 144: 92*
[Shinshu Univ., Matsumoto, Japan.]

Lovejoy, Thomas Eugene III. DIVERSITY AND ABUNDANCE PATTERNS OF LOWER AMAZONIAN RAIN FOREST BIRDS. *Ph.D. thesis, Yale Univ.* 228 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(5), 1971.] *WR 144: 92*
Bird communities in four types of rain forest on the outskirts of Belém, Brazil, were studied using capture-recapture data collected from all levels of the forests from 1967 to 1969.

Medway, Lord, and D. R. Wells. BIRD REPORT: 1968. *Malayan Nature J.* 23 (2/3): 47-77, illus. 1970. [From Biol. Abstr. 52(22), 1971.] *WR 144: 92*
[Univ. Malaya, Kuala Lumpur, Malaysia.]

Nakamura, Toru. [A STUDY OF PARIDAE COMMUNITY IN JAPAN: II. ECOLOGICAL SEPARATION OF FEEDING SITES AND FOODS.] *Misc. Rep. Yamashina's Inst. Ornithol.* 6(1/2): 141-169, illus. 1970. [From Biol. Abstr. 52(24), 1971. In Japanese with English summ.] *WR 144: 92*
[Shinshu Univ., Nagano, Japan.]

Tomialojć, Ludwik. BADANIA ILOŚCIOWE NAD SYNANTROPIJNA AWIFAUNA LEGNICY I OKOLIC. [QUANTITATIVE STUDIES ON THE SYNANTHROPIC AVIFAUNA OF LEGNICA AND ITS ENVIRONS.] *Acta Ornithol.* (Warsaw) 12(9): 293-392, illus. 1970. [From Biol. Abstr. 52(23), 1971. In Polish with English and Russian summ.] *WR 144: 92*

BIRDS--MANUALS, FAUNAS, COMMUNITIES--Continued

Tomoff, Carl Stephen. BREEDING BIRD DIVERSITY IN THE SONORAN DESERT CREOSOTE-BUSH ASSOCIATION. *Ph.D. thesis, Univ. Ariz.* 58 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(6), 1971.] *WR 144: 93*

A model which combines aspects of foliage-height diversity and physiognomic diversity will provide greater accuracy and wider applicability for predicting breeding bird species diversity.

Winterbottom, J. M. THE BIRDS OF THE DEKA EXPEDITION. *Ostrich*, suppl. no. 9. p. 5-26, 1 fig. + 6 pls. July 1971. *WR 144: 93*

[Univ. Cape Town, Rondebosch, Cape Province, South Africa.] Wankie National Park of Rhodesia. Annotated list of 221 spp.

BIRDS--POPULATIONS & FLUCTUATIONS

Batten, L. A. AN INDEX OF POPULATION CHANGES FOR SOME RELATIVELY SCARCE SPECIES. *Bird Study* 18(3): 130-136. Sept. 1971. *WR 144: 93*

[British Trust Ornithol., Beech Grove, Tring, Hertfordshire, England.]

Cody, Martin L. FINCH FLOCKS IN THE MOHAVE DESERT. *Theor. Pop. Biol.* 2(2): 142-158, illus. 1971. [From Biol. Abstr. 52(24), 1971.] *WR 144: 93*

[Univ. Calif., Los Angeles.]

Hummel, Dietrich, and Rudolf Berndt. DER EINFLUG DER GROSSTRAPPE *(OTIS TARDA L.)* NACH WEST-EUROPA IM WINTER 1969/70. [THE INVASION OF THE GREAT BUSTARD *(OTIS TARDA L.)* IN WESTERN EUROPE IN THE WINTER OF 1969/70.] *J. Ornithol.* 112(2): 138-157, illus. 1971. [From Biol. Abstr. 52(22), 1971. In German with English summ.] *WR 144: 93*

[Thielemannst. 1, Braunschweig, Germany.]

Tricot, J. PROLONGATION DE L'INVASION 1968 DU CASSENOIX *(NUCIFRAGA CARYOCATACTES)* (TROISIEME PERIODE): DECEMBRE 1968 A NOVEMBRE 1969. [PROLONGATION OF THE 1968 INVASION OF THE NUTCRACKER *(NUCIFRAGA CARYOCATACTES)* (THIRD PERIOD): DECEMBER 1968 TO NOVEMBER 1969.] *Aves* 6(5): 158-168, illus. 1969. [From Biol. Abstr. 52(19), 1971. In French.] *WR 144: 93*

[Rue Haute 40, 1330-Rixensart, Belgium.]

BIRDS--ECONOMICS, CONTROL, MORTALITY

Austin-Smith, P. J., and H. F. Lewis. ALTERNATIVE VEGETATIVE GROUND COVER. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 153-160. 1970. In English with French summ. *WR 144: 93*

[Acadia Univ., Wolfville, Nova Scotia, Canada.] One possible ecological approach for reducing the probability of bird strikes around airports is the alteration of the vegetative ground cover on the non-paved portions of airfields by substituting for the grass cover traditionally used a cover composed of plants less attractive to birds. Six plant species were initially selected in 1968 for study as alternative ground covers for eastern Canadian airports. Three of these species, black medick, *Medicago lupulina*; low hop-clover, *Trifolium campestre*; and silverweed cinquefoil, *Potentilla anserina* are suitable for fertile soils. Three-toothed cinquefoil, *Potentilla tridentata*; mouse-ear hawkweed, *Hieracium pilosella*; and broom-crowberry, *Corema conradii* are better adapted to infertile soils.--From summ.

Brink, B. W. MILITARY AIRLIFT COMMAND BIRD STRIKE CONTROL PROGRAMME. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 121-125. 1970. In English with French summ. *WR 144: 93*

[Scott AFB, Illinois.] From 50 to 70% of bird strikes involving transport type aircraft occur less than two miles from the runway and under 3000 ft. elevation. These can be alleviated by reducing local bird populations of the problem species through airfield habitat and land use changes. They include

proper handling or removal of sanitary fills, draining or filling "duckponds", removal of roosting and nesting sites and seed and berry-producing vegetation, chemical control of weeds, insects and earthworms, and maintaining grass four to seven inches high. Temporary airfield bird hazards can be minimized with scare devices, chemicals and trapping, properly used and augmented with killing. Effective bird control requires close coordination among base operations, civil engineering, air police, flying safety personnel and the biologist.--From summ.

Brown, J. G. W. BIRD HAZARDS TO AIRCRAFT--CIVIL AVIATION ASPECTS. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 11-13. 1970. *WR 144: 94*
[British European Airways, Ruislip, Middlesex, England.]

Bruin, J. P. C. de. THE BIRD STRIKE PROBLEM "EN ROUTE" IN THE RNLAF. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 15-19, 1 fig. 1970. In English with French summ. *WR 144: 94*
[RNLAF Air Staff, The Hague, Netherlands.]

Bryant, H. E. STATISTICAL MEASUREMENT OF BIRD HAZARDS TO AIRCRAFT. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 61-67. 1970. In English with French summ. *WR 144: 94*
[Dep. Transport, Ottawa, Ontario, Canada.] Summary: This paper proposes methods to determine the magnitude of the bird hazard at airports. The methods proposed are simple. Their objective is to provide a means of orientation for viewing the problem and a level from which it may be compared at various airports. The proposals concern those measures which can be introduced at domestic airports and those which would apply at international airports.

Caithness, T. A. RESEARCH ON BIRD HAZARDS TO AIRCRAFT IN NEW ZEALAND. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 93-99. 1970. In English with French summ. *WR 144: 94*
[New Zealand Wildl. Serv., Wellington, New Zealand.] Summary: In late 1964 detailed ecological surveys began on 12 airfields. Research techniques and preventative measures implemented are outlined, with special reference to: invertebrate surveys, stomach analysis of insectivorous birds, insecticide treatments, Polystyrene models of crucified gulls for clearing traditional roosts and casual flocks, and poisoning of a breeding colony of gulls. Since research findings and recommendations have gained impetus, a reduction of 30% in incidents has been achieved. On those airfields where management has been more intensive the reduction has been even greater, i.e. at Napier 46% less for all species and 89% for gulls. At Auckland International Airport an overall reduction of 44% has been achieved. Because of difficulties experienced in implementing both major and minor ecological modifications near already established airfields, a problem probably not contained only to New Zealand, it would seem desirable that international law should not be confined to cover only the technical features near airfields but should cover the biological facets as well.

Caldara, J. D. THE BIRDS AS A MENACE TO FLIGHT SAFETY. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 111-119. 1970. In English with French summ. *WR 144: 94*
[Flight Safety Foundation, Inc., Arlington, Va.]

Courtney, J. L. CANADIAN AIRPORT PROBLEMS WITH BIRDS. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 129-134. 1970. In English with French summ. *WR 144: 94*
[Dep. Transport, Ottawa, Ontario, Canada.] In Canada, 70% of all reported collisions of civil aircraft with birds occur within the boundaries of airports. --From summ.

Cox, R. S. BIRD INGESTION PROBLEMS RELATING TO GAS TURBINE ENGINES. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 381-390, 2 figs. 1970. In English with French summ. *WR 144: 94*
[Rolls-Royce Ltd., Filton, Bristol, England.]

Dawson, D. G. ESTIMATION OF GRAIN LOSS DUE TO SPARROWS *(PASSER DOMESTICUS)* IN NEW ZEALAND. *New Zealand J. Agr. Res.* 13(3): 681-688, 5 figs. Aug. 1970. *WR 144: 95*

[DSIR, P.O. Box 30466, Lower Hutt, New Zealand.] Abstract: Grain removed by house sparrows from standing crops of wheat and barley was estimated by sampling 5 ears at 30 points within a crop; errors can be minimised if the samples are taken just before harvest. Loss of grain averaged about 5%, but was as high as 20% in a few crops; a logarithmic transformation gave a 95% confidence interval for the mean loss to wheat crops of from 2.6% to 8.4%. Some birds flew at least a mile from their nests to feed on grain, which was preferred at the "milky" stage.

Drury, W. H., and I. C. T. Nisbet. STRATEGY OF MANAGEMENT OF A NATURAL POPULATION: THE HERRING GULL IN NEW ENGLAND. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 441-454. 1970. In English with French summ. *WR 144: 95*

[Mass. Audubon Soc., Lincoln.] The Atlantic Coast population of herring gulls comprises about 700,000 individuals (180,000 breeding pairs) and is doubling every 12 to 15 years. With abundant food and breeding sites, the population is likely to increase at the same rate for several more decades, until it reaches an intolerable size. Possible techniques for managing the population are discussed. The most promising appears to be spraying eggs with oil and formaldehyde. If applied alone, this would lead to a change in dispersal behavior which would limit the effect of the program. Hence it must be combined with a program to eliminate selectively those birds which shift to new colonies.--From summ.

Ferry, V. E. F. DE L'UTILISATION OPERATIONNELLE DES RENSEIGNEMENTS FOURNIS PAR LE RADAR. [THE OPERATIONAL EMPLOYMENT OF INFORMATION SUPPLIED BY RADAR.] *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 267-272. 1970. In French with English summ. *WR 144: 95*

[155, rue de la Croix-Nivert, Paris, France.] Radar observations on airports allow the immediate use of information particularly during local bird migrations that cause much of the collisions reported. The personnel must be thoroughly trained in making observations and complete courses are given twice a year. Stress is placed on methods of avoiding collisions, the appropriate phraseology to be used and the safety measures necessary to control efficiently the bird hazard.--From summ.

Galushin, V. M. A QUANTITATIVE ESTIMATION OF PREDATORY BIRDS' PRESSURE UPON GAME BIRDS' POPULATIONS IN THE CENTRAL REGION OF THE EUROPEAN PART OF THE USSR. *Trans. IX Int. Congr. Game Biol.* p. 553-562. 1970. In English with Russian summ. *WR 144: 95*

Gibson, George G., and Eric Broughton. DEATH OF PURPLE MARTIN NESTLINGS APPARENTLY DUE TO INGESTED MOLLUSC SHELLS. *Canadian Field Natur.* 85(3): 257. July-Sept. 1971. *WR 144: 95*

[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Abstract: In a new Purple Martin colony at Ottawa, most of the young died in the nest. Death of the only two nestlings examined is attributed to gizzard impaction by shell fragments of a locally extinct clam, *Hiatella arctica* (L.).

Griffin, H. CONTRIVED CORRIDORS--A CONCEPT TO CONSERVE BOTH BIRDS AND AIRCRAFT. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 299-305. 1970. In English with French summ. *WR 144: 95*

[Ontario Hydro, Clarkson, Canada.] Proposal that the whole matter of bird migration be examined with a view to co-ordinating bird refuges, establishing sanctuary zones and arranging these into conservation corridors extending from the nesting grounds in the North to the winter resting areas. Within these "Contrived Corridors" the birds could be given the kind of protection they require for survival; people charged with responsibility for wildlife management would have an opportunity to study the effect of their work; some control over

the migratory habits of the more hazardous varieties could be exercised; the corridors themselves could be made into a series of linear continental green-belts in which we could recover some of the natural beauty of this land.--From summ.

Hart, P. F. MILITARY BIRD STRIKES IN THE UNITED KINGDOM. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 21-30, 8 figs. 1970. In English with French summ. *WR 144: 96*
[Min. Defense, London, England.]

Heighway, D. G. FALCONRY IN THE ROYAL NAVY. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 187-194. 1970. In English with French summ. *WR 144: 96*
[Directorate of Naval Air Warfare, MOD(N), London, England.] Conclusion: By judicious use of falcons and pyrotechnics a most serious bird hazard problem has been overcome. It must be stressed once more that falcons have their limitations and that they need special care, especially in their feeding, training and housing. When conditions do not favour falcons other methods must be persistently used in order to minimise the threat from the local bird population, by never allowing them to settle on the airfield.

Hild, J. AGRICULTURAL PROVISIONS AGAINST BIRDS ON AIRFIELDS. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 195-202, 6 figs. 1970. In English with French summ. *WR 144: 96*
[German Air Force, 5050 Porz-Wahn 2, Germany.] Summary: Agricultural provisions against birds on German airfields refer to dust-heaps, lakes, streams, swamps, grassland and ruderal areas, as well as all types of animals. As for dust-heaps a complete readjusting seemed the best method for deteriorating the bird attracting materials and animals; lakes and streams should be changed in an oligotrophical direction; swamps should be drained. For grassland and ruderal places the employment of herbicides and growth-inhibiting substances has proved effective. Sheep grazing and agricultural usage should be forbidden. Against game, deer and small animals special chemical substances showed good results. A newly developed chemical substance against birds seems to be effective.

Hild, J. BIRD MOVEMENT FORECAST IN GERMANY. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 349-357, 7 figs. 1970. In English with French summ. *WR 144: 96*
[German Air Force, 5050 Porz-Wahn 2, Germany.] A bird migration map of western Germany was drawn up and serves for general information of Air Traffic Control and flight planning. It is the basis for bird migration forecasts which are given in the form of actual bird strike warnings (NOTAM) and 14-day bird migration forecasts. An international system of radar and visual bird observations was established. The main forecast problem at the moment is given by the influence of weather on the bird migration; some general and preliminary rules about such correlations and influences were set up.--From summ.

Hild, J. BIRD STRIKES IN THE GERMAN AIR FORCE. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 31-42, 15 figs. 1970. In English with French summ. *WR 144: 96*
[German Air Force, 5050 Porz-Wahn 2, Germany.]

Hild, J. METHODS OF ECOLOGICAL RESEARCH ON AIRFIELDS. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 135-142, 3 figs. 1970. In English with French summ. *WR 144: 96*
[German Air Force, 5050 Porz-Wahn 2, Germany.] Summary: Ecological investigations are the prerequisite for special provisions for scaring birds from airfields. These investigations should cover the ornithological, animal, vegetational, ground, hydrological and climatological conditions. Qualitative and quantitative investigations of birds should be carried out by visual and radar observations; the method depends on the size and on the physiognomic state of

the airfield. The general animal life is important for the appearance of birds which eat animals; in a similar way conclusions can be drawn on the appearance of some grassland and wood-birds from the vegetational state. Investigations of vegetation should follow sociological methods; moreover, they should inform about the ground/soil and hydrological conditions in the airfield. Research of relationships between weather situation/meteorological parameters and bird appearance seems important for bird movement prediction. All ecological investigations should include the surroundings, too, and the results of all investigations should be consolidated in a biotopical map.

Horeff, T. G. DEVELOPMENT OF A PROTOTYPE TURBINE ENGINE INLET DEVICE FOR PROTECTION AGAINST BIRD INGESTION. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 403-412, 7 figs. 1970. In English with French summ. *WR 144: 97*
[Aircraft Development Serv., FAA, Washington, D.C.]

Jackson, W. B., and L. K. Fiedler. RADAR STUDIES OF CROW FLOCKS AT THE TOLEDO AIRPORT. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 253-264, 6 figs. 1970. In English with French summ. *WR 144: 97*
[Bowling Green State Univ., Bowling Green, Ohio.] The crows, which started to roost in mid-November, used a pre-final roost (often the airport itself) and a final roost (a woodlot). The final roost had a great tolerance against disturbance but it was possible (by hunting pressure) to more than double the distance between pre-final and final roosts. The time of both the morning dispersal and evening return flight was related to light-intensity.

Jacoby, V. E. BIRD STRIKES IN THE USSR. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 101-109, 1 fig. 1970. In English with French summ. *WR 144: 97*
[A. N. Severtzov Inst., Moscow, USSR.] Strikes of civil and military planes by Passeres, Laridae, Accipitridae, Columbidae, Anatidae birds are the most frequent.--From summ.

Keil, W. THE CRANE MIGRATION IN GERMANY IN CONNECTION WITH WEATHER AND RADAR. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 245-251. 1970. In English with French summ. *WR 144: 97*
[D 6 Frankfurt/M.-Fechenheim, Germany.] In spring and autumn between 20,000 and 30,000 cranes *(Grus grus)* cross Germany. It is known that more or less severe incidents and accidents between these birds and aircraft have happened in Europe and overseas. In autumn 1966 we started investigations of the crane migration in connection with weather and radar. We used several radar stations and built up a network of visual observers. We have now a good survey for three autumn and three spring migration periods. In most cases the cranes cross Germany more or less in two waves in autumn. In spring the mass of the cranes migrate in March, mostly in one wave. The flight altitude fluctuates between 150 and 6,000 ft. Most of the flocks fly between 150 and 900 ft. The estimated flight speed fluctuates between 25 and 35 knots. Each flock contains usually, on the average, 50 to 100 birds. So far as we could see, there is a close connection between crane migration and weather factors.--From summ.

Keil, W. INVESTIGATIONS OF THE BIRD HAZARD PROBLEM IN THE FEDERAL REPUBLIC OF GERMANY. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 45-50. 1970. In English with French summ. *WR 144: 97*
[D 6 Frankfurt/M.-Fechenheim, Germany.]

Khan, M. A. BIRDS OF ASIA AND THE FAR EAST. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 51-59. 1970. *WR 144: 97*
[Pakistan Intern. Airlines, Karachi Airport, Pakistan.] Asian birds as hazards to aircraft.

LaHam, Q. N. AMINO ACID ANALYSIS AND BIRD IDENTIFICATION. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 415-417, 1 fig. 1970. In English with French summ. *WR 144: 98*

[Univ. Ottawa, Ottawa, Ontario, Canada.] Microscopic methods and the use of amino acid analysis of protein residues are described as means of establishing whether or not a bird has been involved in an engine failure. Results of recent experiments to determine whether it is possible to identify bird types by these methods are presented and it appears that it is now possible to divide them at least into families.--From summ.

Mikx, F. H. M. GOSHAWKS AT LEEUWARDEN AIRBASE. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 203-205, 1 fig. 1970. In English with French summ. *WR 144: 98*

[Royal Netherlands Air Force, The Hague, Netherlands.] Summary: In 1967 the Royal Netherlands Air Force, through the use of Goshawks *(Accipiter gentilis)*, adopted another bird-scare measure at its Leeuwarden base. Unlike falcons, goshawks are useless for hunting during their moulting period. In order to have a hawk continually operating it was necessary to artificially initiate and control the moulting period. The falconer was able to induce and shorten the moulting period, thus making it possible in 1969 to have two of the four hawks always operating. This procedure also gives the falconer a greater mobility in operating on other airbases if this is required by bird intensification there. In contrast with such devices as the alarm cry or pyroacoustics, the hawks have proven most effective and do not induce habituation. However, shellcrackers, bird-evict and a constant patrol of the airfield by the falconer are still necessary, especially when the effectiveness of a hawk is limited by encircling birds.

Morse, J. T. ACTIVITIES OF THE FEDERAL AVIATION ADMINISTRATION AND THE UNITED STATES INTER-AGENCY BIRD HAZARD COMMITTEE ON BIRD HAZARDS TO AIRCRAFT. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 69-76. 1970. In English with French summ. *WR 144: 98*

[Federal Aviation Administration, Washington, D.C.]

Myres, M. T. THE DETECTION OF BIRDS AND INSECTS, AND THE STUDY OF BIRD MOVEMENTS, WITH RADAR (A RÉSUMÉ WITH BIBLIOGRAPHY). *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 501-519. 1970. *WR 144: 98*

[Univ. Calgary, Calgary, Alberta, Canada.] Includes a classified chronological bibliography.

Newton, E. A NOTE ON THE BIRD STRIKE HAZARD TO AIRCRAFT. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 499. 1970. *WR 144: 98*

[Accidents Investigation Branch, Board of Trade (Civil Aviation), London, England.] Record and illustration of the serious type of damage that can occur, and has in the past occurred, to aircraft and engines, because of impact with birds in flight. On occasions, these impacts have led to fatal accidents.--From summ.

Richardson, G. A. BIRD MIGRATION IN WESTERN CANADA AND THE AIR LINE PILOT. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 227-230. 1970. In English with French summ. *WR 144: 98*

[Canadian Air Line Pilots Ass., New Westminster, British Columbia, Canada.] "The paper deals generally with various seasonal bird problems which may be encountered as well as some of the more local conditions which are present the year round."

Richardson, W. J. TEMPORAL VARIATIONS IN THE VOLUME OF BIRD MIGRATION: A RADAR STUDY IN CANADA. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 325-334, 8 figs. 1970. In English with French summ. *WR 144: 98*

[Cornell Univ., Ithaca, N.Y.] A radar study of the seasonal, hour-to-hour and day-to-day variations in intensity of long-distance bird movements in Alberta and Ontario with suggestions how results can be used operationally.--From summ.

Romer, J. D. BIRD PROBLEMS AT HONG KONG AIRPORT. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 77-86, 3 figs. 1970. In English with French summ. *WR 144: 99*

[Central Government Offices, Hong Kong.] One species *Milvus migrans lineatus* (black-eared kite) presents a serious hazard to aircraft at Hong Kong Airport.

Schaefer, G. W. BIRD HAZARD AND ITS RADAR DETECTION. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 321. 1970. In English with French summ. *WR 144: 99*

[Univ. Technol., Loughborough, Leicester, England.] The characteristics of bird radar signatures, including cross section, frequency spectrum, wingbeat modulation and flock Doppler effects, are presented. The theory of a spheroidal target is used to correlate the data for different wavelengths and bird weights. Bat echoes fit the same scheme. The correlation provides a basis for the radar design studies.--From summ.

Seaman, E. A. U. S. AIR FORCE PROBLEMS IN BIRD/AIRCRAFT STRIKES. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 87-91. 1970. In English with French summ. *WR 144: 99*

[HQ USAF, Washington, D.C.]

Sladen, W. J. L., W. W. H. Gunn, and W. W. Cochran. STUDIES ON THE MIGRATIONS OF THE WHISTLING SWAN, 1969. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 233-244, 4 figs. 1970. In English with French summ. *WR 144: 99*

[Johns Hopkins Univ., Baltimore, Md.] Summary: Migratory flights of Whistling Swans at times present a considerable hazard to aircraft. Studies begun in 1967 were continued and expanded in the spring of 1969. Methods used include conventional and special banding, a coded system of dyeing, radio telemetry and radar photography. Reported here are the results of tracking migrating swans by visual identification and by radio tracking from aircraft and ground vehicles. Twenty birds were fitted with small radio transmitters. The swan that was traced the longest distance flew from the Chesapeake Bay, Maryland, to North Dakota via Lake St. Clair and Lake Michigan, and was then tracked from an aircraft on a flight of about 580 miles to a small lake in northern Saskatchewan.

Solman, V. E. F. AIRPORT DESIGN AND MANAGEMENT TO REDUCE BIRD PROBLEMS. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 143-147. 1970. In English with French summ. *WR 144: 99*

[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Summary: Airport location and design must be planned to minimize the hazards from birds. Areas habitually used by birds should be avoided. Soil should be sandy and well-drained, or a drainage system should be designed to run off surface water quickly. A sturdy, fire-resistant ground cover, which is not attractive to birds, should be selected. Several plants, of which the most promising on some soils is *Potentilla tridentata*, may be more suitable than grass. Vegetation which provides food, shelter, or roosting areas for birds or habitat for small mammals should be removed. Earthworms and snails should be eliminated if possible or at least kept off paved runway areas. Any use of airport land for crop production requires very careful control to avoid creating bird hazards through kinds of crops planted, their parasites or culture methods. Grazing of domestic mammals may also cause a hazard. Airport buildings, structures, and landscaping should be designed to minimize attractiveness to birds. Buildings outside airport boundaries may also create bird hazards. Modern jet airports tend to attract some birds because they provide large areas of almost uniform habitat with minimum human presence. For that reason, emergency action to remove sudden arrivals of birds may still be necessary and must be prompt and well organized.

Stevenson, A. B., and B. B. Virgo. DAMAGE BY ROBINS AND STARLINGS TO GRAPES IN ONTARIO. *Canadian J. Plant Sci.* 51(2): 201-210, illus. 1971. [From Biol. Abstr. 52(20), 1971.] *WR 144: 99*

[Res. Sta., Canadian Dep. Agr., Vineland, Ontario, Canada.] *"Sturnus vulgaris* and *Turdus migratorius."*

Stortenbeker, C. W. GROUND COVER AT SCHIPHOL AIRPORT. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 161-166. 1970. In English with French summ. *WR 144: 100*

[Inst. Biol. Field Res., Arnhem, Netherlands.] The main conclusions so far are: (1) Gulls are more accident-prone than any other species. (2) Gulls, partridge and lapwing together form more than 80% of the problem. (3) There is a peak period in the bird hazard situation from July-August to October-November. (4) In general, grassland is more attractive to birds than arable land. When the grass is mown at a minimum length of 10 cm. there is a noticeable shift towards arable land. (5) However, during the peak period in number of bird strikes arable land is more attractive than grassland, in particular stubbles and soil just after cultivation. When crop rotation necessitates growing of grains, a green fertilizer crop is sown with it in order to keep stubbles unattractive to gulls and lapwing until fall. (6) Active scaring of birds will remain necessary, in particular when soil is being cultivated.--From summ.

Tanner, J. A., S. J. Davie, C. Romero-Sierra, and F. Villa. MICROWAVES--A POTENTIAL SOLUTION TO THE BIRD HAZARD PROBLEM IN AVIATION. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 215-221. 1970. In English with French summ. *WR 144: 100*

[Nat. Res. Council, Ottawa, Canada.] The result of the work can be summarized that there are behavioral, EEG and EMG changes and it has been found that environmental factors play an important role in the effectiveness of a particular microwave field. In the light of present results this approach appears promising for the solution of the bird hazard problem in aviation.--From summ.

Tudor, A. J. EXPERIMENTAL TECHNIQUES IN BIRD INGESTION RESEARCH. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 391-401, 6 figs. 1970. In English with French summ. *WR 144: 100*

[Rolls-Royce Ltd., Derby, England.] In attempting to understand the problem of damage to gas turbine aero engines due to bird strikes, the importance of representative rig testing is emphasized. Some experimental techniques concerned particularly with simulating damage to first stage rotor blading are described.--From summ.

Van Tets, G. F., W. J. M. Vestjens, and E. Slater. ORANGE RUNWAY LIGHTING MAY HELP REDUCE THE BIRD HAZARD TO AIRCRAFT ON AIRFIELDS. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 183-185. 1970. In English with French summ. *WR 144: 100*

[CSIRO, Canberra, Australia.] Summary: More than 80% of the birds and bats which were examined after being struck by aircraft in Australia were found to have recently fed on insects and/or spiders. A major source of insects and spiders is in the vicinity of runway lights, where as much as 182 grams of insects and spiders may concentrate in one night around a single light. Orange lights which exclude wavelengths shorter than 530 mμ were found to attract substantially less insects and spiders than white lights of equal visibility to humans. It is suggested that orange instead of white runway lighting might help reduce the bird hazard to aircraft on airfields.

Wilde, K. K., and H. J. Gursahaney. WORK OF ICAO IN THE FIELD OF BIRD HAZARD REDUCTION. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 459-467, 2 figs. 1970. In English with French summ. *WR 144: 100*

[Int. Civil Aviation Organization, Montreal, Quebec, Canada.] The formation and structure of ICAO is outlined briefly and the work of the three Sections primarily concerned with the bird hazard problem is reviewed.--From summ.

Williams, T. C., and Janet M. Williams. BAT HAZARDS TO AIRCRAFT: DETECTION BY RADAR. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 307-319, 4 figs. 1970. In English with French summ. *WR 144: 100*

[State Univ. N.Y., Buffalo.] The principal source of collisions with aircraft is not the bats emerging from their caves but more the diffusely distributed bats feeding within 300 m. of the ground. Collisions with feeding bats will best be remedied by modification of the aircraft to withstand occasional impacts of these small animals.--From summ.

Winmill, A. E. CHEMICAL CONTROL OF BIRD ATTRACTANTS (WORMS) AT CANADIAN FORCES BASE TRENTON. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 167-179, 8 figs. 1970. In English with French summ. *WR 144: 101*
[Canadian Forces Headquarters, Ottawa, Ontario, Canada.] Observations to date have confirmed that: (a) Sevin is not an effective worm control agent. (b) Lead arsenate is an effective pesticide and has not, to date, caused any undesirable side effects. (c) The elimination of worms from a specific area is not in itself a complete solution to the over-all bird problem.--From summ.

Wright, E. N. BIRD DISPERSAL TECHNIQUES AND THEIR USE IN BRITAIN. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 207-214. 1970. In English with French summ. *WR 144: 101*
[Min. Agr., Fisheries & Food, Guildford, Surrey, England.] Techniques that interfere with the neuro-physiological systems of birds are currently only in the research stage and their application to practical problems of bird management are largely untried. By contrast we now have some 15 years research and development experience in the use of bio-acoustic signals to scare birds and the Royal Air Force has adapted such a system for regular use on airfields in Britain and Europe. This system, known as Sappho, comprises a tapedeck, amplifier and loudspeaker suitable for mounting on a vehicle; the latest version having a power output of 30 watts and an over-all frequency range of 500-15,000 Hz. ± 3 dB. By using equipment of this type good clearances of birds were obtained experimentally, the success rating being about 80%. Experience, however, shows that this level of efficiency is only achieved in practice if personnel entrusted with bird scaring are adequately trained and briefed. It is fortuitous that the species constituting the greatest risk to aircraft in Britain respond readily to bio-acoustic stimuli. The same may not be true in other countries and the method is no panacea.--From summ.

BIRDS--PARASITES & DISEASES

Barden, E. S., H. L. Chute, D. C. O'Meara, and H. T. Wheelwright. A BIBLIOGRAPHY OF AVIAN MYCOSIS (PARTIALLY ANNOTATED). Third edition. *Coll. Life Sci. & Agr., Univ. Maine* (Orono). 193 p. Mar. 1971. Price $5.00. *WR 144: 101*
With 1016 citations.

Boyd, Elizabeth M., and Anne E. Fry. METAZOAN PARASITES OF THE EASTERN BELTED KINGFISHER, *MEGACERYLE ALCYON ALCYON*. *J. Parasitol.* 57(1): 150-156. Feb. 1971. *WR 144: 101*
[Mount Holyoke Coll., South Hadley, Mass.]

Brennan, James M. ENDOPARASITIC CHIGGERS: VI. *NEOSCHOENGASTIA ESORHINA* SP. N. (ACARINA: TROMBICULIDAE), A SECOND INTRANASAL CHIGGER OF BIRDS. *J. Parasitol.* 57(3): 666-667. June 1971. *WR 144: 101*
[Public Health Serv., Rocky Mountain Lab., Hamilton, Mont.] Abstract: *Neoschoengastia esorhina* sp. n. from nares of ovenbird, *Automolus infuscatus*, Pará, Brazil, is described.

Dobrokhotov, B. P., T. A. Stefanova, and E. A. Malenkova. [DETECTION OF *PASTURELLA PESTIS* ANTIGEN IN THE PELLETS OF BIRDS OF PREY AS A METHOD OF REVEALING PLAGUE EPIZOOTICS.] *Zh. Mikrobiol. Epidemiol. Immunobiol.* 48(1): 132-135. 1971. [From Biol. Abstr. 52(24), 1971. In Russian with English summ.] *WR 144: 101*
[N.F. Gamaleya Inst. Epidemiol. Microbiol., Moscow, USSR.]

Fernando, M. A., P. H. G. Stockdale, and O. Remmler. THE ROUTE OF MIGRATION, DEVELOPMENT, AND PATHOGENESIS OF *SYNGAMUS TRACHEA* (MONTAGU, 1811) CHAPIN, 1925, IN PHEASANTS. *J. Parasitol.* 57(1): 107-116, 15 figs. Feb. 1971. *WR 144: 101*
[Univ. Guelph, Guelph, Ontario, Canada.] The route of migration, development, and pathogenesis of *Syngamus trachea* in pheasants and young chickens are described and the genesis of the pulmonary lesions discussed.

Hicks, Ellis A. CHECK-LIST AND BIBLIOGRAPHY ON THE OCCURRENCE OF INSECTS IN BIRDS' NESTS / SUPPLEMENT II. *Iowa State J. Sci.* 46(2): 123-338. Nov. 1971. *WR 144: 102*
[Iowa State Univ. Sci. & Technol., Ames.]

Koch, Carl F., and Harry W. Huizinga. *SPLENDIDOFILARIA PASSERINA* SP. N. (NEMATODA: FILARIOIDEA) FROM THE ENGLISH SPARROW IN ILLINOIS. *J. Parasitol.* 57 (3): 473-475, 7 figs. June 1971. *WR 144: 102*
[Ill. State Univ., Normal.] First record of a filarial nematode from the English sparrow.--From abstr.

Manwell, Reginald D., and Gloria J. Sessler. MALARIA PARASITES OF TOUCANS. *J. Protozool.* 18(4): 570-574, 17 figs. Nov. 1971. *WR 144: 102*
[Syracuse Univ., Syracuse, N.Y.]

Morgan, Herbert R. ANTIBODIES FOR MAREK'S DISEASE VIRUS IN SERA FROM DOMESTIC CHICKENS AND WILD FOWL IN KENYA. *Avian Dis.* 15(3): 611-613. July-Sept. 1971. *WR 144: 102*
[Univ. Rochester, Rochester, N.Y.]

Raitis, T. INTESTINAL PARASITES IN FINNISH GALLINACEOUS GAME BIRDS. *Trans. IX Int. Congr. Game Biol.* p. 647-651, 2 figs. 1970. In English with Russian summ. *WR 144: 102*
[State Game Res. Inst., Helsinki, Finland.]

Rao, T. Ramachandra, and P. K. Rajagopalan. ARTHROPOD FAUNA OF THE NESTS OF SOME COMMON BIRDS IN POONA, INDIA WITH SPECIAL REFERENCE TO BLOOD SUCKING FORMS. *J. Bombay Natur. Hist. Soc.* 67(3): 414-429. 1970. [From Biol. Abstr. 52(23), 1971.] *WR 144: 102*
[Virus Res. Center, Poona, India.]

Rowan, M. K. ON TEMPERATURE AND DISEASE AS LIMITING FACTORS IN DISTRIBUTION. *Ostrich*, suppl. no. 9. p. 147-151. July 1971. *WR 144: 102*
[Univ. Cape Town, Rondebosch, Cape Province, South Africa.] Distribution patterns of the avifauna.

Schmidt, Gerald D., and Robert E. Kuntz. NEMATODE PARASITES OF OCEANICA. XI. *MADELINEMA ANGELAE* GEN. ET SP. N., AND *INGLISONEMA MAWSONAE* SP. N. (HETERAKOIDEA: INGLISONEMATIDAE) FROM BIRDS. *J. Parasitol.* 57(3): 479-484, 15 figs. June 1971. *WR 144: 102*
[Univ. Northern Colo., Greeley.]

Spassky, A. A., L. P. Spasskaya, and N. M. Yurpalova. [GAME-BIRDS' CESTODES OF EAST SIBERIA.] *Trans. IX Int. Congr. Game Biol.* p. 680-684. 1970. In Russian with English summ. *WR 144: 102*

Taft, Stephen J. INCIDENCE OF THE TREMATODE FAMILY CYCLOCOELIDAE IN SOME NORTH AMERICAN BIRDS. *J. Parasitol.* 57(4): 831. Aug. 1971. *WR 144: 102*
[Wis. State Univ., Stevens Point.]

Tongson, Mario S., Meliton N. Novilla, Simplicio Lomingkit, and Eva Balediata. AN OUTBREAK OF AVIAN TRICHOMONIASIS IN THE PHILIPPINES. *Philippine J. Vet. Med.* 8(1/2): 141-145, illus. 1969. [From Biol. Abstr. 52(22), 1971.] *WR 144: 102*
[Univ. Philippines, Quezon City, Philippines.]

Zajicek, D. EXPERIMENTAL INFECTION OF DOMESTIC BIRDS BY *COTYLURUS STRIGEOIDES* DUBOIS, 1958 (TREMATODA STRIGEIDAE). *Folia Parasitol.* (Prague) 18(2): 113-118, illus. 1971. [From Biol. Abstr. 52(24), 1971.] *WR 144: 102*
[Inst. Parasitol., Czech. Acad. Sci., Prague, Czechoslovakia.] The trematode *C. strigeoides* was obtained from *Columba livia domestica, Gallus gallus* and *Anas platyrhynoha domestica*, experimentally fed with mollusks of the species *Lymnaea*

stagnalis and *L. auricularia*. Until the present, leeches have been described as the 2nd intermediate hosts. Natural infections by this trematode species were found in the localities under investigations in *Anas platyrhyncha domestica, A. platyrhyncha, A. strepera, Aythya ferina* and *A. fuligula*.

GAME BIRDS--GENERAL

Gavrin, V. F. [BIOLOGICAL PRINCIPLES OF EXPLOITING POPULATIONS OF GALLINACEOUS BIRDS IN THE USSR.] *Trans. IX Int. Congr. Game Biol.* p. 750-754. 1970. In Russian with English summ. *WR 144: 103*

Halloran, Arthur F., and Audrey G. Halloran. THE FERAL CHICKENS (PHASIANIDAE) OF FRENCH POLYNESIA. *Proc. Okla. Acad. Sci.* 49: 169-170. 1970. *WR 144: 103* [Lawton, Okla.]

Palermo, Raymond J., and Gary L. Doster. A COMPARISON OF THE LATE WINTER FOODS AND PARASITES OF BOBWHITE QUAIL AND BLACK FRANCOLINS IN SOUTHWESTERN LOUISIANA. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 206-212, 1 fig. 1970 [1971]. *WR 144: 103*

[La. Wild Life & Fisheries, Tioga.] Conclusions: From the crop analyses it appeared that francolins utilized a much higher protein diet than quail. Seeds and green leafy materials made up the bulk of the quail's diet while a greater percentage of animal material was utilized by francolins. Although food preferences differed between species, some competition was believed to be present, but not enough to be detrimental to either quail or francolins. Parasite burdens were generally low and apparently insignificant to the well-being of either species at the time of study. All observations point to both species capable of thriving in essentially the same habitat in southwest Louisiana.

Robinson, Lawrence H. INTRODUCTION OF EXOTIC GAME BIRDS IN SOUTH CAROLINA. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 152-156. 1969 [1970]. *WR 144: 103*

[Clemson Univ., Clemson, S.C.] Conclusions: From the studies on the population levels of the exotic game birds, it is apparent that the introduction of exotic game birds in South Carolina thus far has not been successful. In cases where the introduced birds have survived, the releases have been more or less continuous on an annual basis. This indicates that the survival of the introduced birds may be due to the regular and periodic release of the exotic game birds, rather than to reproductive success. The red junglefowl has shown promise, but it is too early to determine its chances of survival. It is suggested that census counts be continued on all release sites for five years after the last release on each area, in order to be able to ascertain a latent population increase.

Smith, David M. AN EVALUATION OF INDIAN RED JUNGLEFOWL RELEASES IN BALDWIN COUNTY, ALABAMA. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 157-171, 5 figs. 1969 [1970]. *WR 144: 103*

[Utah State Univ., Logan.] Abstract: An intensive field study of the status and ecology of introduced Indian red junglefowl *(Gallus gallus murghi* Delacour*)* was conducted from March 22 to August 26, 1968 in Baldwin County, Alabama. A high incidence of junglefowl "hybrids", resulting from crossing with domestic chickens *(Gallus* sp.*)*, was observed in six separate groups and eight broods. An average of 2.9 chicks per brood was observed from March 2 to August 22. A probable failure of junglefowl to establish a wild population is indicated. Two hatchery-reared groups of 30 junglefowl each were released during the study in varied habitat conditions to investigate factors influencing dispersal. Six hens were equipped with 27 megaHertz radio transmitters. Observations of these marked junglefowl, as well as of previously released birds, indicate that attempted establishment near farm sites was a result mainly of attractive edge conditions. A dense understory appeared to be a cover requirement. Formal sampling of vegetation was conducted in four plots selected on the basis of use

by junglefowl. A junglefowl trap is described which uses a crowing cock as a decoy. Comparison of climatic conditions near the origin of the release stock in India and on the study area does not reveal a factor which would prevent their establishment. Several genetic and environmental factors are discussed which support the belief that the use of pen-reared junglefowl is the chief reason for their apparent failure to establish a wild population on the study area.

QUAIL

Byrd, Elon E., and Forest E. Kellogg. *MEDIORHYNCHUS BAKERI*, A NEW ACANTHOCEPHALAN (GIGANTORHYNCHIDAE) FROM THE BOB-WHITE, *COLINUS VIRGINIANUS VIRGINIANUS* (L.). *J. Parasitol.* 57(1): 137-142, 13 figs. Feb. 1971. *WR 144: 104*
[Univ. Ga., Athens.] Abstract: Two specimens of a new acanthocephalan, *Mediorhynchus bakeri* sp. n., were recovered from the small intestine of one of 190 bob-white, *Colinus virginianus virginianus* (L.), from Leon County, Florida. The new species most closely resembles *M. papillosus*, but is distinguished by number of hooks and spines, rows of hooks and spines, and overall body size. *Mediorhynchus bakeri* is described in detail.

Cariou, Marie-Louise. ETUDE DU CHANT DE LA CAILLE JAPONAISE: *COTURNIX COTURNIX JAPONICA*. VARIATION INDIVIDUELLE ET COMPARAISON DE TROIS POPULATIONS. [STUDY OF THE JAPANESE QUAIL *(COTURNIX COTURNIX JAPONICA)* SONG: INDIVIDUAL DIFFERENCES AND COMPARISON OF THREE POPULATIONS.] *Bull. Biol. France Belgique* 103(3/4): 323-338, illus. 1969. [From Biol. Abstr. 52(23), 1971. In French with English summ.] *WR 144: 104*
[91-Gif-sur-Yvette, France.]

Case, Ronald Mark. BIOENERGETICS OF THE BOBWHITE, *COLINUS VIRGINIANUS*. *Ph.D. thesis, Kans. State Univ.* 120 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(4), 1971.] *WR 144: 104*

Gabuzov, O. S., and V. S. Ivanova. [BREEDING QUAILS FOR GAME FARMS.] *Trans. IX Int. Congr. Game Biol.* p. 114-117. 1970. In Russian with English summ. *WR 144: 104*
"Coturnix coturnix."

Gore, Horace G., Clyde E. Holt, and John C. Barron. WEIGHT AND AGE CHARACTERISTICS AS CRITERIA FOR HARVEST OF BOBWHITES IN NORTH CENTRAL TEXAS. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 213-223, 2 figs. 1970 [1971]. *WR 144: 104*
[Tex. Parks & Wildl. Dep., Waco.] It is submitted that bobwhite weight and physical condition can be utilized as criteria for harvest and subsequent management of the species. The harvest beginning date should coincide with the average date on which 90% of juvenile birds reach the 150 gram acceptable size. This date during the period in North Texas was November 25. Bobwhite weight and physical condition were shown to remain well within acceptable limits during late winter indicating that these factors are not prime considerations for determining the season closing date.--From abstr.

Guyomarc'h, Jean-Charles. INFLUENCE DE L'ENVIRONNEMENT ET DE L'ÉTAT INTERNE SUR LE CRI DE RECONNAISSANCE DE LA CAILLE JAPONAISE. [EFFECT OF ENVIRONMENTAL CONDITIONS AND INTERNAL STATE ON THE "RECOGNITION CALL" OF THE JAPANESE QUAIL.] *Bull. Biol. France Belgique* 103(3/4): 387-400, illus. 1969. [From Biol. Abstr. 52(23), 1971. In French with English summ.] *WR 144: 104*
[Lab. Ethol., 35-Rennes-Beaulieu, France.]

Henderson, Carl W. COMPARATIVE TEMPERATURE AND MOISTURE RESPONSES IN GAMBEL AND SCALED QUAIL. *Condor* 73(4): 430-436, 4 figs. Winter 1971. *WR 144: 104*
[Lab. Nuclear Med. & Radiation Biol., P.O. Box 495, Mercury, Nev.] Various responses to high temperature and low moisture were studied in the laboratory in Gambel quail *(Lophortyx gambelii)* and scaled quail *(Callipepla squamata)*.--From summ.

Morris, A. K. THE RED-CHESTED QUAIL IN NEW SOUTH WALES. *Emu* 71(4): 178-180, 1 fig. Oct. 1971. *WR 144: 105*
[20 Harrison St., Old Toongabbie, NSW, Australia.] *"Turnix pyrrhothorax."*

Norton, C. C., and M. A. Peirce. THE LIFE CYCLE OF *EIMERIA BATERI* (PROTOZOA, EIMERIIDAE) IN THE JAPANESE QUAIL *COTURNIX COTURNIX JAPONICUM*. *J. Protozool.* 18 (1): 57-62, 9 figs. Feb. 1971. *WR 144: 105*
[Central Veterinary Lab., Weybridge, Surrey, England.] Synopsis: *Eimeria bateri*, a parasite of the Indian quail, was described from laboratory infections in Japanese quail. First generation schizonts developed in the glands of the duodenum and upper intestine. Second, 3rd and 4th generation schizonts and gametocytes occurred in the villous epithelium. There was a gradual spread along the small intestine until the whole organ was affected. The prepatent period was 4 days and the patent period 6 days. Graded doses from 5,000 to 1,280,000 oocysts produced very little pathogenic effect in young quail. *E. bateri* did not infect young pheasants or chicks.

Shah, Harish L., and Cornell A. Johnson. *EIMERIA BATERI* BHATIA, PANDEY AND PANDE, 1965 FROM THE HUNGARIAN QUAIL *COTURNIX C. COTURNIX* IN THE UNITED STATES AND ITS ATTEMPTED TRANSMISSION TO THE CHICKEN. *J. Protozool.* 18(2): 219-220, 2 figs. May 1971. *WR 144: 105*
[Univ. Ill., Urbana.] Described from the Hungarian quail for the first time in the U.S. Attempts to transmit the coccidium to the chicken failed; therefore, it is considered host-specific.

PHEASANTS

Forester, Richard T. LANDOWNER UTILIZATION OF A WILD PHEASANT RESOURCE. *Calif. Fish & Game* 57(4): 298-306, 1 fig. Oct. 1971. *WR 144: 105*
[Wildl. Mgmt. Branch, Calif. Dep. Fish & Game, Sacramento.] Data were collected during 1968 on the utilization and economic importance of the wild ringneck pheasant *(Phasianus colchicus)* resource in the Oakdale area, Stanislaus County, California.--From abstr.

Gajić, I., and V. Jović. [THE EFFECT OF THE NUMBER AND SEX RATIO OF THE PHEASANTS IN A CAGE AND ITS SIZE ON THE EGG PRODUCTION OF FEMALES, FECUNDITY OF EGG, AND MORTALITY OF EMBRYOS.] *Trans. IX Int. Congr. Game Biol.* p. 102-105. 1970. In Russian with English summ. *WR 144: 105*
[Operat.-Nauch. Inst. "Dr. Ilija Djuričić", Belgrade, Yugoslavia.]

Gajić, I., and V. Jović. [24-HOUR ACTIVITY OF PHEASANTS.] *Trans. IX Int. Congr. Game Biol.* p. 118-125, 6 figs. 1970. In Russian with English summ. *WR 144: 105*
[Operat.-Nauch. Inst. "Dr. Ilija Djuričić", Belgrade, Yugoslavia.]

Hartman, Fred E., and Dale E. Sheffer. POPULATION DYNAMICS AND HUNTER HARVEST OF RING-NECKED PHEASANT POPULATIONS IN PENNSYLVANIA'S PRIMARY RANGE. *Trans. NE Sect. Wildl. Soc., 28th NE Fish & Wildl. Conf.* p. 179-205, 3 figs. 1971. *WR 144: 105*

Hines, Tommy. A FINAL REPORT ON TENNESSEE'S EFFORTS TO INTRODUCE PHEASANTS. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 252-268. 1970 [1971]. *WR 144: 105*
[Tenn. Game & Fish Comm., Nashville.] A report on the pheasant introduction portion of the Foreign Game Bird Investigation Program since 1960.

Hönich, M. [THE EFFECT OF GLYPONDIN ON BREEDING PHEASANTS.] *Trans. IX Int. Congr. Game Biol.* p. 112-113. 1970. In Russian with English summ. *WR 144: 105*

Kurskova, T. N. [THE PRACTICE OF PHEASANT BREEDING IN BYELOVEZHSKAYA PUSHCHA.] *Trans. IX Int. Congr. Game Biol.* p. 106-110. 1970. In Russian with English summ. *WR 144: 105*
[Minsk. Gosudarst. Pedagog. Inst., Minsk, USSR.]

Linder, Raymond L., Robert B. Dahlgren, and Charles R. Elliott. PRIMARY FEATHER PATTERN AS A SEX CRITERION IN THE PHEASANT. *J. Wildl. Mgmt.* 35(4): 840-843, 1 fig. Oct. 1971. *WR 144: 106*
[S. Dak. Coop. Wildl. Res. Unit, Brookings.]

Pav, Y. [HELMINTH FAUNA OF ADULT PHEASANTS IN PRODUCTIVE PHEASANT NURSERIES AND DYNAMICS OF HELMINTH OCCURRENCE.] *Trans. IX Int. Congr. Game Biol.* p. 609-611. 1970. In Russian with English summ. *WR 144: 106*
[Výskumni Ustav Les. Hospodárstvi Myslivosti, Prague, Czechoslovakia.]

GROUSE, PARTRIDGE, ETC.

Birkan, M. LE RÉGIME ALIMENTAIRE DE LA PERDRIX GRISE D'APRÈS LES CONTENUS DE JABOTS ET DES ESTOMACS. [ALIMENTARY DIET OF THE GREY PARTRIDGE ACCORDING TO THE CROP AND STOMACH CONTENTS.] *Ann. Zool. Ecol. Anim.* 2(1): 121-153, illus. 1970. [From Biol. Abstr. 52(24), 1971. In French with English summ.] *WR 144: 106*
[Inst. Nat. Res. Agron., Jouy-en-Josas, France.] Qualitative and quantitative evaluations are given for the plant and invertebrate food of the gray partridge. Both plant and animal food types were related to the type of habitat and to the season of the year.

De Greling, C. BIOLOGIE DES TÉTRAS *TETRAO UROGALLUS* L. ET *LYRURUS TETRIX* L. EN FINLANDE. [THE BIOLOGY OF THE TETRAONIDS *TETRAO UROGALLUS* L. AND *LYRURUS TETRIX* L. IN FINLAND (REVIEW).] *Alauda* 39(1): 7-28, illus. 1971. [From Biol. Abstr. 52(20), 1971. In French with English summ.] *WR 144: 106*
[State Game Res. Inst., Unioninkatu 45 B, Helsinki, Finland.]

Eng, Robert L. TWO HYBRID SAGE GROUSE X SHARP-TAILED GROUSE FROM CENTRAL MONTANA. *Condor* 73(4): 491-493, 3 figs. Winter 1971. *WR 144: 106*
[Mont. State Univ., Bozeman.]

Friesen, Victor C. THE CRAZY FLIGHT PHENOMENON OF THE RUFFED GROUSE. *Blue Jay* 29(3): 121-124. Sept. 1971. *WR 144: 106*
Review of literature and description of the crazy flight phenomenon of the ruffed grouse *Bonasa umbellus.*

Hirabayashi, Kunio, and Hiroshi Mitsuishi. [ON THE PTARMIGAN IN THE YATSU MOUNTAINS, NAGANO PREFECTURE.] *Bull. Inst. Natur. Educ. Shiga Heights* 8: 37-48, illus. 1969. [From Biol. Abstr. 52(22), 1971. In Japanese with English summ.] *WR 144: 106*
[Omachi Alpine Mus., Omachi, Japan.]

Krott, P. MORE CAPERCAILLIE *(TETRAO UROGALLUS MAJOR)* IN CENTRAL EUROPEAN HUNTING GROUNDS. *Trans. IX Int. Congr. Game Biol.* p. 213-216. 1970. In English with Russian summ. *WR 144: 106*
[Kleinsölk 8961, Stein a. d. Enns, Austria.]

Logminas, V., and A. Petraitis. [POPULATION DYNAMICS AND POPULATION STRUCTURE OF THE PARTRIDGE *(PERDIX PERDIX)* IN LITHUANIA.] *Trans. IX Int. Congr. Game Biol.* p. 435-439, 3 figs. 1970. In Russian with English summ. *WR 144: 106*
[Inst. Zool. & Parazitol. Akad. Nauk Litovskoi SSR, Vilnius, USSR.]

Myrberget, S. ON THE PART PLAYED BY PREDATION IN SHORT-TERM VARIATIONS IN THE POPULATION OF WILLOW GROUSE, *LAGOPUS LAGOPUS*, IN NORWAY. *Trans. IX Int. Congr. Game Biol.* p. 458-464, 1 fig. 1970. In English with Russian summ. *WR 144: 106*
[Norwegian State Game Res. Inst., Vollebekk, Norway.]

Olech, B. [PRODUCTIVITY OF PARTRIDGE POPULATION AND FACTORS DETERMINING IT.] *Trans. IX Int. Congr. Game Biol.* p. 440-442. 1970. In Russian with English summ. *WR 144: 107*
[Inst. Ekol. Pol. Akad. Nauk, Nowy Swiat, Poland.]

Pendergast, B. A., and D. A. Boag. NUTRITIONAL ASPECTS OF THE DIET OF SPRUCE GROUSE IN CENTRAL ALBERTA. *Condor* 73(4): 437-443. Winter 1971. *WR 144: 107*
[Univ. Alberta, Edmonton, Alberta, Canada.] Report on the level of some nutrients in the major items of the annual diet of spruce grouse, *Canachites canadensis*, from central Alberta.

Pulliainen, E. PRODUCTIVITY OF A PARTRIDGE *(PERDIX PERDIX)* POPULATION IN WESTERN FINLAND. *Trans. IX Int. Congr. Game Biol.* p. 432-434. 1970. In English with Russian abstr. *WR 144: 107*
[Univ. Helsinki, Helsinki, Finland.]

Pulliainen, Erkki. CLUTCH-SIZE OF THE PARTRIDGE *PERDIX PERDIX* L. *Ornis Scandinavica* 2(1): 69-73, illus. 1971. [From Biol. Abstr. 52(23), 1971.] *WR 144: 107*
[Univ. Helsinki, Helsinki, Finland.]

Rajala, P. [SOME ASPECTS OF METHODS IN FINNISH TETRAONID POPULATION RESEARCH.] *Trans. IX Int. Congr. Game Biol.* p. 243-245. 1970. In Russian, German and English. *WR 144: 107*
[State Game Res. Inst., Helsinki, Finland.]

Rusakov, O. S. [COMPARISON OF DIFFERENT METHODS OF ESTIMATING TETRAONID NUMBERS IN THE ASPECT OF THEIR RELIABILITY AND LABOUR-CONSUMPTION.] *Trans. IX Int. Congr. Game Biol.* p. 421-425. 1970. In Russian with English summ. *WR 144: 107*

Rusch, Donald H., and Lloyd B. Keith. SEASONAL AND ANNUAL TRENDS IN NUMBERS OF ALBERTA RUFFED GROUSE. *J. Wildl. Mgmt.* 35(4): 803-822, 4 figs. Oct. 1971. *WR 144: 107*
[Manitoba Dep. Mines, Resour. & Environ. Mgmt., Winnipeg, Manitoba, Canada.]

Volkov, N. I. [BEHAVIOR OF CAPERCAILLIE *(TETRAO UROGALLUS* L.*)* NESTLINGS AT DIFFERENT AIR TEMPERATURES.] *Vestn. Zool.* 4(1): 49-53, illus. 1970. [From Biol. Abstr. 52(24), 1971. In Russian with English summ.] *WR 144: 107*

Wiley, Richard Haven, Jr. TERRITORIALITY AND NON-RANDOM MATING IN SAGE GROUSE *CENTROCERCUS UROPHASIANUS*. *Ph.D. thesis, Rockefeller Univ.* 204 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 32(4), 1971.] *WR 144: 107*
A study of polygyny in sage grouse *Centrocercus urophasianus* emphasizing the interactions among males that influence their successes in mating and the evolution of the males' reproductive biology.

TURKEY

Barwick, Larry H., David H. Austin, and Lovett E. Williams, Jr. ROOSTING OF YOUNG TURKEY BROODS DURING SUMMER IN FLORIDA. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 231-243, 5 figs. 1970 [1971]. *WR 144: 107*
[Fla. Game & Fresh Water Fish Comm., Gainesville.] During spring and summer in 1969 and 1970 approximately 200 observations were made of wild turkey *(Meleagris gallopavo)* brood roosting sites, most of which were found by radiotelemetry. The age that broods began to roost in trees varied from 12 to 19 days for the 14 broods. Most of the ground roosts were located under forest canopies in sparse ground cover. Brood hens normally did not defecate in their ground roosts. Broods utilized a different site for roosting each night, but there was a tendency for the roosts to be clustered in favorite roosting areas. Four broods traveled an average of 0.27 miles between successive nightly roost sites. One brood moved an average of 0.24 miles farther each night than the other three broods.--From abstr.

Gore, Horace G. EXPLOITATION AND RESTORATION OF TURKEY IN TEXAS. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 37-45, 3 figs. 1969 [1970]. *WR 144: 108*

[Tex. Parks & Wildl. Dep., Waco.] Historical review of turkey populations in Texas.

Hillestad, Hilburn O., and Daniel W. Speake. ACTIVITIES OF WILD TURKEY HENS AND POULTS AS INFLUENCED BY HABITAT. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 244-251, 3 figs. 1970 [1971]. *WR 144: 108*

[Univ. Ga., Athens.] Abstract: Daily movements and brood rearing among wild turkey *(Meleagris gallopavo silvestris)* hens in the Piedmont of eastern Alabama was studied during 1968 and 1969. Twelve hens were tagged in the patagium and instrumented with radio transmitters. Daily movements did not cover the entire spring and summer ranges. Daily movements of non-nesting hens averaged 0.4 mile; those of nesting hens averaged 0.22 mile; and those of hens with broods averaged 0.32 mile. They were usually linear and were strongly influenced by feeding areas provided by permanent pastures. All brood rearing ranges were within grazed permanent pastures and adjacent grazed woodlands. Management suggestions for brood rearing habitat based on range and movement data are given.

Prestwood, Annie K., Forest E. Kellogg, Gary L. Doster, and S. A. Edgar. COCCIDIA IN EASTERN WILD TURKEYS OF THE SOUTHEASTERN UNITED STATES. *J. Parasitol.* 57(1): 189-190. Feb. 1971. *WR 144: 108*

[Univ. Ga., Athens.]

Speake, Dan W., Larry H. Barwick, Hilburn O. Hillestad, and Walker Stickney. SOME CHARACTERISTICS OF AN EXPANDING TURKEY POPULATION. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 46-58, 2 figs. 1969 [1970]. *WR 144: 108*

[Ala. Coop. Wildl. Res. Unit, Auburn.] Study conducted during 1965-1968 of a turkey population on the Saugahatchee Wildlife Research Area in Alabama.

Tzilkowski, Walter M. WINTER ROOST SITES OF WILD TURKEYS IN SOUTHWEST PENNSYLVANIA. *Trans. NE Sect. Wildl. Soc., 28th NE Fish & Wildl. Conf.* p. 167-178, 4 figs. 1971. *WR 144: 108*

[W. Va. Univ., Morgantown.] Abstract: Thirteen roost sites of the eastern wild turkey *(Meleagris gallopavo silvestris)* were found in Rachelwood Wildlife Research Preserve during the winter of 1970-71. Measurements were recorded for 10 variables that might have influenced the selection of a roost site. These data were compared with similar adjacent sites. No differences could be determined between the utilized roosts and alternate sites. Perhaps, there is no need for specific management for winter roosting cover. Timber stands that provide winter food probably also provide adequate roosting cover.

Wunz, Gerald A. TOLERANCES OF WILD TURKEYS TO HUMAN DISTURBANCE AND LIMITED RANGE. *Trans. NE Sect. Wildl. Soc., 28th NE Fish & Wildl. Conf.* p. 159-165. 1971. *WR 144: 108*

[Pa. Game Commission, Milroy.] Indications from this study that birds of wild stock may be established in small wooded units near urban regions, broadened older concepts of their habitat requirements and opened possibilities for considerable expansion of Pennsylvania's turkey range. Most of the resulting turkey populations would be aesthetic ones, however, with hunting limited to spring seasons for gobblers.—From abstr.

DOVES & PIGEONS

Amend, Spencer R. PROGRESS REPORT ON CAROLINA SANDHILLS MOURNING DOVE STUDIES. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 191-201, 2 figs. 1969 [1970]. *WR 144: 108*

[McBee, S.C.]

Baldaccini, N. E., V. Fiaschi, L. Fiore, and F. Papi. INITIAL ORIENTATION OF DIRECTIONALLY TRAINED PIGEONS UNDER OVERCAST AND SUNNY CONDITIONS. *Monit. Zool. Italiano* 5(1): 53-63, illus. 1971. [From Biol. Abstr. 52(24), 1971. In English with Italian summ.] *WR 144: 109*
[Ist. Biol. Gen. Univ., Via A. Volta 6, Pisa, Italy.]

Brown, N. Sandra. A SURVEY OF THE ARTHROPOD PARASITES OF PIGEONS *(COLUMBA LIVIA)* IN BOSTON. *J. Parasitol.* 57(6): 1379-1380. Dec. 1971. *WR 144: 109*
[Simmons Coll., Boston, Mass.]

Doucet, J. A PROPOS DE LA NIDIFICATION DU PIGEON COLOMBIN *(COLUMBA OENAS).* [ABOUT THE NESTING OF THE STOCK DOVE *(COLUMBA OENAS).*] *Aves* 6(2): 53-61, illus. 1969. [From Biol. Abstr. 52(19), 1971. In French.] *WR 144: 109*

Gibb, J. A. A PIGEON'S CHOICE OF PLUMS. *Notornis* 17(3): 239. Sept. 1970. *WR 144: 109*
[DSIR, Lower Hutt, New Zealand.] The New Zealand pigeon, *Hemiphaga novaeseelandiae*, observed in plum trees ate only those plums that were ripe, small enough to be swallowed whole, and easily accessible.

Greiner, Ellis Charles. THE COMPARATIVE LIFE HISTORIES OF *HAEMOPROTEUS SACHAROVI* AND *HAEMOPROTEUS MACCALLUMI* IN THE MOURNING DOVE *(ZENAIDA MACROURA). Ph.D. thesis, Univ. Nebr.* 115 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(5), 1971.] *WR 144: 109*

Gwynn, Jack V., and Don W. Hayne. COMPARISON OF MOURNING DOVE HARVEST DATA FROM WING COLLECTION AND MAIL SURVEY, VIRGINIA, 1968-1969. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 202-208. 1969 [1970]. *WR 144: 109*

Jones, Glenn. SOME OBSERVATIONS ON THE HOMING INSTINCT OF THE MOURNING DOVE. *Proc. Iowa Acad. Sci.* 76: 241-244. 1969. *WR 144: 109*
[Iowa Conserv. Comm., Ruthven.] Four *Zenaidura macroura* were recaptured each year for five years after being banded in 1964.

Morris, Robert L., and Carl J. Erickson. PAIR BOND MAINTENANCE IN THE RING DOVE *(STREPTOPELIA RISORIA). Anim. Behav.* 19(2): 398-406, 5 figs. May 1971. *WR 144: 109*
[Duke Univ., Durham, N.C.] Abstract: Two experiments were carried out as follows: in the first males and females previously paired in the laboratory and isolated for periods up to 7 months were released into large outdoor cages in groups of three pairs each. In all cases the original pairs were re-established. In the second experiment females were offered a choice of former mates or strange males confined behind glass partitions in separate compartments. Twelve of fifteen females laid eggs near the former mate and performed more reproductive behaviour in his presence. These studies suggest that ring doves are capable of recognizing other individuals. Moreover, the pairing relationship is retained when physical contact is prevented, when individuals are isolated for extended periods, and when the original pairing relationship is experimenter-determined.

Murton, R. K. THE SIGNIFICANCE OF A SPECIFIC SEARCH IMAGE IN THE FEEDING BEHAVIOUR OF THE WOOD-PIGEON. *Behaviour* 40(1-2): 10-42, 13 figs. 1971. In English with German summ. *WR 144: 109*
[Nature Conservancy, Monks Wood Exp. Sta., Abbots Ripton, Huntingdon, England.] *"Columba palumbus."*

Orcutt, F. Scott, Jr. EFFECTS OF OESTROGEN ON THE DIFFERENTIATION OF SOME REPRODUCTIVE BEHAVIOURS IN MALE PIGEONS *(COLUMBA LIVIA). Anim. Behav.* 19(2): 277-286. May 1971. *WR 144: 109*
[Univ. Akron, Akron, Ohio.] It is concluded that early treatment with oestrogen alters the normal development of reproductive behavior in male pigeons.--From abstr.

Perez, G. S. A. ECOLOGICAL FEATURES OF PHILIPPINE TURTLE DOVES ON GUAM, IN RELATION TO SOME MANAGEMENT IMPLICATIONS. *Trans. IX Int. Congr. Game Biol.* p. 832-838. 1970. In English with Russian summ. *WR 144: 110*
[Dept. Agr., Agana, Guam.]

Walcott, Charles, and Martin C. Michener. SUN NAVIGATION IN HOMING PIGEONS--ATTEMPTS TO SHIFT SUN COORDINATES. *J. Exp. Biol.* 54(2): 291-316. 1971. [From Biol. Abstr. 52(19), 1971.] *WR 144: 110*
[State Univ. N.Y., Stony Brook.] Small errors in the biological clocks of pigeons appear to have no effect upon their navigation.

WATERFOWL

Ahlén, Ingemar, and Åke Andersson. BREEDING ECOLOGY OF AN EIDER POPULATION ON SPITSBERGEN. *Ornis Scandinavica* 1(2): 83-106, 7 figs. 1970. *WR 144: 110*
[Skogshögskolan, S-104 05 Stockholm 50, Sweden.] An eider *(Somateria mollissima)* population of 3300 pairs was studied on West-Spitsbergen in 1964 and 1967. Ecological and behavioral adaptations to predation and climate are discussed.

Alexander, H. Lloyd, Jr. MALLARD AND WOOD DUCK BROOD SURVIVAL AT REMINGTON FARMS, CHESTERTOWN, MARYLAND, 1968-1969. *Trans. NE Sect. Wildl. Soc., 28th NE Fish & Wildl. Conf.* p. 221-230, 2 figs. 1971. *WR 144: 110*
[Del. Dep. Natur. Resour. & Environ. Control, Dover.] Abstract: A two-year study was conducted to measure reproduction and brood survival of ducks using artificial nesting structures at Remington Farms. Weekly nest checks were made of the 118 available nest sites. During the study, active nests of eighty-five mallards and ninety-one wood ducks were observed. Incubating hens were banded and marked with color coded plastic nape streamers. When possible ducklings were marked with numbered fingerling tags for later identification. Observations were made from towers to follow and identify individual broods. During July and August, bait traps were used to capture and band local ducklings. Observations and limited live trapping indicated a high predator population on the study areas. Few broods were hatched other than those found in the predator resistant nesting structures. Results of the study indicate that wood ducks were significantly more successful than mallards in nesting and brood survival within the same habitat. Behavioral observations indicated that the game farm parentage of Remington Farm's mallards and their relative tameness contribute to poor brood survival.

Ardamatskaya, T. B., and B. V. Sabinevsky. [COUNT OF NESTING AND WINTERING GAME WATERFOWL IN THE CHERNOMORSK RESERVE.] *Trans. IX Int. Congr. Game Biol.* p. 410-414. 1970. In Russian with English summ. *WR 144: 110*

Averin, Y. V., I. M. Ganya, and A. I. Munteanu. [THE NUMBERS OF MAIN SPECIES OF WATERFOWL IN MOLDAVIA.] *Trans. IX Int. Congr. Game Biol.* p. 415-418. 1970. In Russian with English summ. *WR 144: 110*

Baker, James L. WOOD DUCK BROOD SURVIVAL ON THE NOXUBEE NATIONAL WILDLIFE REFUGE. *Proc. 24th Ann. Conf. SE Assn. Game & Fish Comms.* p. 104-108. 1970 [1971]. *WR 144: 110*
[Miss. State Univ., State College.] Abstract: Two methods were used to determine survival. In 1968, newly hatched ducklings were web-tagged and subsequently recaptured. The survival rate from hatching to flight stage was 56%. In 1969, direct observation was the method used. Observations of 77 broods revealed a 52% survival from hatching to six weeks of age, with 74% of the total mortality occurring during the first two weeks after hatching.

Bateman, Hugh A. AN EVALUATION OF THE HELICOPTER FOR CENSUSING WATERFOWL IN LOUISIANA'S COASTAL MARSHES AND RICELANDS. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 90-103, 2 figs. 1970 [1971]. *WR 144: 111*

[La. Wild Life & Fisheries Comm., Baton Rouge.] During the fall of 1969 a helicopter was evaluated for censusing waterfowl in Louisiana by comparing it with a Cessna 210 airplane. The comparisons indicated that while a helicopter equipped with flotation gear was a safe and highly effective vehicle for censusing waterfowl, twice as much actual flight time was required to complete the same amount of work and operational costs were double those for the airplane. About 1.5 times as many waterfowl were recorded from the helicopter as from the Cessna. However, statistical analysis indicated the difference between aircraft in the total number of ducks recorded was not significant. In contrast, significantly more mottled ducks *(Anas fulvigula maculosa)* were recorded with the helicopter, indicating it was more effective than the Cessna for counting the species. A test of interaction between aircraft and months was not significant; thus, each type aircraft measured the same rate of change in total duck numbers from August-September to November. This suggests that both aircraft are equally effective in measuring large changes in waterfowl populations by the transect sampling system. The helicopter provided advantages over the Cessna in visibility, slower air speed, and creates a noise level that induces inactive ducks to move. Its light fuel load, slow cruising speed and operational costs were major disadvantages.--From abstr.

Bengtson, Sven Axel. HABITAT SELECTION OF DUCK BROODS IN LAKE MYVATN AREA, NORTH-EAST ICELAND. *Ornis Scandinavica* 2(1): 17-26, illus. 1971. [From Biol. Abstr. 52(23), 1971.] *WR 144: 111*

[Univ. Lund, Lund, Sweden.] Local movements, site tenacity, rearing areas, and broods' relationship to vegetation were investigated for *Anas platyrhynchos, A. strepera, A. crecca, A. penelope, Aythya marila, A. fuligula, Bucephala islandica, Clangula hyemalis, Melanitta nigra,* and *Mergus serrator.*

Blackwell, F., and E. W. Houghton. RADAR TRACKING AND IDENTIFICATION OF WILD DUCK DURING THE AUTUMN MIGRATION. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 359-376, 15 figs. 1970. In English with French summ. *WR 144: 111*

[Royal Radar Establishment, Great Malvern, Worcestershire, England.] The flight characteristics and bird activity modulation (BAM) patterns of specially released birds, sight-identified birds, and birds on migration.

Boyd, H. OBSERVATIONS ON DUCK HUNTING IN EASTERN CANADA IN 1968 AND 1969. *Canadian Wildl. Serv., Dep. Environ. Occas. Pap.* no. 12. 24 p., 5 figs. 1971. [In English with French abstr.] *WR 144: 111*

Observations of hunter performance provide information on specific differences in crippling losses and on factors governing the choice by hunters of what ducks they shot at, how effectively they shot at different times during the season and in various kinds of weather and what proportions of the ducks brought down were retrieved and kept.--From abstr.

Burger, Joanna. THE WESTERN GREBE IN MINNESOTA. *Loon* 43(1): 4-9, illus. Spring 1971. *WR 144: 111*

A review of the history and new observations of the western grebe *Aechmophorus occidentalis* in Minnesota. The breeding range is extending into the available habitat in Minnesota.

Bylin, Kjell. LÄTEN OCH SPEL HOS SMÅLOMMEN *GAVIA STELLATA*. [COURTSHIP AND CALLS IN THE RED-THROATED DIVER *GAVIA STELLATA*.] *Vår Fågelvärld* 30(2): 79-83, illus. 1971. [From Biol. Abstr. 52(24), 1971. In Swedish with English summ.] *WR 144: 111*

[Dagl6nargatan 30, Hedemora, Sweden.]

Cringan, Alexander T. STATUS OF THE WOOD DUCK IN ONTARIO. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 297-312. 1971. *WR 144: 112*
[Colo. State Univ., Fort Collins.] Estimated harvests of wood duck in Ontario declined from 105,000 in 1967-68 to 86,000 in 1969-70, while estimated pre-season populations dropped from 825,000 to 522,000 during the same time.--From summ.

Eygenraam, J. A. SOME REMARKS ON THE ECOLOGY OF THE MALLARD *(ANAS PLATYRHYNCHOS)*, BASED ON DUTCH RINGING DATA. *Trans. IX Int. Congr. Biol.* p. 845-847. 1970. In English with Russian summ. *WR 144: 112*
[Res. Inst. Nature Mgmt., Arnhem, Netherlands.]

Filonov, K. P., V. I. Lysenko, and P. P. Reva. [NESTING OF *PODICEPS CRISTATUS* L. ON MOLOCHNY ESTUARY IN THE AZOV SEA.] *Vestn. Zool.* 4(6): 76-78, illus. 1970. [From Biol. Abstr. 52(20), 1971. In Russian with English summ.] *WR 144: 112*

Grandy, John W. IV, and Joseph A. Hagar. ANALYZING FOOD HABITS OF MARITIME BLACK DUCKS. *Trans. NE Sect. Wildl. Soc., 28th NE Fish & Wildl. Conf.* p. 207-212. 1971. *WR 144: 112*
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Hunter, Brian F., and William E. Clark. WATERFOWL BOTULISM MANAGEMENT. *Calif. Dep. Fish & Game, Wildl. Mgmt. Leafl.* no. 14. 12 p., 8 figs. [1971.] *WR 144: 112*
"Using present technology, there is no way to maintain a duck marsh that is absolutely free of the threat of botulism, but by following the principles outlined herein largescale outbreaks may be avoided."

Isakov, Y. A. [WATERFOWL COUNTS IN THE USSR: METHODS USED AND FIRST RESULTS.] *Trans. IX Int. Congr. Game Biol.* p. 402-405. 1970. In Russian with English summ. *WR 144: 112*
[Inst. Geogr. Akad. Nauk USSR, Moscow, USSR.]

Jarvis, Robert L., and Stanley W. Harris. LAND-USE PATTERNS AND DUCK PRODUCTION AT MALHEUR NATIONAL WILDLIFE REFUGE. *J. Wildl. Mgmt.* 35(4): 767-773. Oct. 1971. *WR 144: 112*
[Oreg. State Univ., Corvallis.] Abstract: Several aspects of duck production were compared on two areas that differed in amount of residual cover and water distribution. The area with substantial residual cover had a greater density of mated pairs, more nesting species, earlier and later nests, and better nesting success than the area without residual cover.

Johnson, Neil F. EFFECTS OF LEVELS OF DIETARY PROTEIN ON WOOD DUCK GROWTH. *J. Wildl. Mgmt.* 35(4): 798-802, 3 figs. Oct. 1971. *WR 144: 112*
[Univ. Mass., Amherst.] Abstract: In 1969 and 1970, four isocaloric diets (5, 10, 15, and 20% protein) were fed to groups of newly hatched wood ducks *(Aix sponsa)* until they reached 60 days of age. Growth was measured as tarsus length and body weight. The growth rate was significantly ($P < 0.005$) reduced in groups fed the lower protein diets. The levels of transaminase and total serum protein were also observed. Survival of the ducklings for the 60-day period was directly related to the protein level of the diets.

Karstad, Lars, and Louis Sileo. CAUSES OF DEATH IN CAPTIVE WILD WATERFOWL IN THE KORTRIGHT WATERFOWL PARK, 1967-1970. *J. Wildl. Dis.* 7(4): 236-241, 3 figs. Oct. 1971. *WR 144: 112*
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causally associated with stresses of captivity, were the most serious mortality factors. These diseases were amyloidosis, myocardial infarction, and gout. With the exception of aspergillosis and one serious outbreak of *Pasteurella anatipestifer* infection, infectious diseases were of secondary importance.

LaHart, David E., and George W. Cornwell. HABITAT PREFERENCE AND SURVIVAL OF FLORIDA DUCK BROODS. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 117-121. 1970 [1971]. *WR 144: 113*
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Lotter, C. Frederick, and George W. Cornwell. COMPARISON OF AIRPLANE, AIR-BOAT AND HELICOPTER FOR CENSUSING FLORIDA DUCKS, *ANAS PLATYRHYNCHOS FULVIGULA*. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 97-101. 1969 [1970]. *WR 144: 113*
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McGilvrey, Frank B. CONDITIONING BLACK DUCKS TO NEST IN ELEVATED CYLINDERS. *Trans. NE Sect. Wildl. Soc., 28th NE Fish & Wildl. Conf.* p. 213-220. 1971. *WR 144: 113*
[Patuxent Wildl. Res. Center, Laurel, Md.] Hand-reared black ducks, *Anas rubripes*, can be conditioned to use elevated, predator-proof nesting cylinders. The reason ducks accept cylinders is not known, though imitation may be important in increasing use by younger hens. Predator protection may offset poor adaptability of hand-reared birds and allow black ducks to become established in new areas.

McGilvrey, Frank B., and Francis M. Uhler. A STARLING-DETERRENT WOOD DUCK NEST BOX. *J. Wildl. Mgmt.* 35(4): 793-797, 1 fig. Oct. 1971. *WR 144: 113*
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McHenry, Merril Gene. BREEDING AND POST-BREEDING MOVEMENTS OF BLUE-WINGED TEAL *(ANAS DISCORS)* IN SOUTHWESTERN MANITOBA. *Ph.D. thesis, Univ. Okla.* 76 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(5), 1971.] *WR 144: 113*
First report of waterfowl molting on their breeding grounds.

Mihelsons, H., G. Lejins, and A. Mednis. [FACTORS DETERMINING THE PRODUCTIVITY OF DUCK NESTING AREAS.] *Trans. IX Int. Congr. Game Biol.* p. 208-212, 4 figs. 1970. In Russian with English summ. *WR 144: 113*
[Inst. Biol. Akad. Nauk Latviiskoi SSR, Riga, USSR.]

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[Inst. Biol. Akad. Nauk Latviiskoi SSR, Riga, USSR.]

Nilsson, Leif. LOCAL AND SEASONAL VARIATION IN SEX-RATIOS OF DIVING DUCKS IN SOUTH SWEDEN DURING THE NON-BREEDING SEASON. *Ornis Scandinavica* 1(2): 115-128, illus. 1970. [From Biol. Abstr. 52(23), 1971.] *WR 144: 114*
[Ecol. Bldg., Lund, Sweden.]

Norberg, R. Åke, and Ulla Maria Norberg. TAKE-OFF, LANDING AND FLIGHT SPEED DURING FISHING FLIGHTS OF *GAVIA STELLATA* (PONT.). *Ornis Scandinavica* 2(1): 55-67, illus. 1971. [From Biol. Abstr. 52(23), 1971.] *WR 144: 114*
[Univ. Gothenburg, Gothenburg, Sweden.]

Odom, Ronald R. NEST BOX PRODUCTION AND BROOD SURVIVAL OF WOOD DUCKS ON THE PIEDMONT NATIONAL WILDLIFE REFUGE 1969. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 108-117, [1 fig.]. 1970 [1971]. *WR 144: 114*
[Ga. Game & Fish Comm., Fort Valley.] During the 157-day nesting season 46 successful hatches were recorded out of a total of 60 nesting attempts. The average number of ducklings leaving the nest box was 9.7. From the 194 available nest boxes there were 46 (24%) successful hatches. Six of the 194 boxes were used twice. Brood size in the 4-7 week age class was reduced by nearly two-thirds.--From abstr.

Oetting, Robert B., and J. Frank Cassel. WATERFOWL NESTING ON INTERSTATE HIGHWAY RIGHT-OF-WAY IN NORTH DAKOTA. *J. Wildl. Mgmt.* 35(4): 774-781. Oct. 1971. *WR 144: 114*
[Dep. Mines, Resour. & Environ. Mgmt., Winnipeg, Manitoba, Canada.]

Percival, H. Franklin, Lloyd G. Webb, and Norwood R. Page. SOME ECOLOGICAL CONDITIONS UNDER WHICH SELECTED WATERFOWL FOOD PLANTS GROW IN SOUTH CAROLINA. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 121-127. 1970 [1971]. *WR 144: 114*
[Clemson Univ., Clemson, S.C.] Abstract: Nine waterfowl food plants were selected from food habit studies conducted on waterfowl wintering in South Carolina coastal areas. These plants *(Ansilama keisak, Brasenia schreberi, Eleocharis equisetoides, Eleocharis quadrangulata, Polygonum arifolium, Polygonum hydropiperoides, Ruppia maritima, Scirpus robustus,* and *Scirpus validus)* were studied in relation to certain chemical and physical properties of soil and water collected from sites producing stands of these plants. It was found that soil nutrition, salinity, and water level are in primary control of the plant growth and distribution in these wetland areas.

Ramsay, A. Ogden, and Eckhard H. Hess. SENSITIVE AGE PARAMETERS AND OTHER FACTORS IN CONDITIONING TO A DANGER CALL IN MALLARD DUCKLINGS. *Z. Tierpsychol.* 28(2): 164-174, illus. 1971. [From Biol. Abstr. 52(20), 1971. In English with German summ.] *WR 144: 114*
[Univ. Chicago, Chicago, Ill.]

Roed, Ulf. FAELDNINGSTRAEK OVER SONDERJYLLAND OG VED KALMARSUND. [MOLTING MIGRATION IN SOUTHERN JUTLAND AND AT KALMARSUND.] *Flora Fauna* 77(2): 45-51. 1971. [From Biol. Abstr. 52(24), 1971. In Danish with English summ.] *WR 144: 114*
[Heklagade 4, 8200 Aarhus N, Denmark.] From 1965-1970 the molting-migration of eider *(Somateria mollissima)*, common scoter *(Melanita nigra)*, and shelduck *(Tadorna tadorna)* was studied in Southern Jutland, and from July 26 to Aug. 8, 1970, observations were made at Kalmarsund, south-eastern Sweden.

Sapetina, I. M. [WATERFOWL COUNTS IN THE EUROPEAN PART OF THE USSR.] *Trans. IX Int. Congr. Game Biol.* p. 406-409. 1970. In Russian with English summ. *WR 144: 114*

Sen, A. R. INCREASED PRECISION IN CANADIAN WATERFOWL HARVEST SURVEY THROUGH SUCCESSIVE SAMPLING. *J. Wildl. Mgmt.* 35(4): 664-668. Oct. 1971. *WR 144: 115*
[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Abstract: A mail survey of steady waterfowl hunters who hunted successively during 1967-68 and 1968-69 was conducted in Ontario during 1968-69 to develop a sampling plan yielding more precise estimates of the kill of waterfowl and the number of days hunted during a season. The sampling scheme consisted of combining estimates from two independent samples of hunters: (a) those whose performance during both 1968-69 and the previous season (1967-68) were known, and (b) those whose performance for 1968-69 alone was known. The method can be extended to include the universe of unsteady hunters who hunted during 1968-69 only. The survey has revealed that for characteristics such as kill per hunter, for which the correlation in the estimates between two successive years was positive and high, the new estimate was about one-third more efficient than the mean kill estimated on the basis of the current year's performance only. There was a gain of 15% in efficiency in the estimates of days hunted, for which the correlation was moderate; there was practically no gain in the estimates of kill per day, for which the correlation was low.

Strange, Thomas H., Earl R. Cunningham, and John W. Goertz. USE OF NEST BOXES BY WOOD DUCKS IN MISSISSIPPI. *J. Wildl. Mgmt.* 35(4): 786-793. Oct. 1971. *WR 144: 115*
[S.C. Wildl. Resour. Dep., Columbia.] Abstract: Nest data for wood ducks *(Aix sponsa)* were obtained from 55 to 253 boxes, checked from 1966 to 1969 at Yazoo National Wildlife Refuge, Glen Alan, Mississippi. Contingent factors such as amount of utilization, nest success, and predation were compared. As a supplementary project, 30 nest boxes were erected on Bayou D'Arbonne Lake, Louisiana, to determine the primary acceptance of nest boxes in an unmanaged area. A total of 15,273 eggs were laid in the nest boxes on Yazoo National Wildlife Refuge, and 6,036 ducklings left the boxes. Thirty-five natural cavities were located on 10 line transects, each 1 chain wide, and from 3,700 to 18,000 feet in length, but none of these cavities were used as nesting sites. Nineteen of the cavities were in willows *(Salix nigra)*, the most abundant of the 22 species of trees found on the transects. The main predators of 1,292 wood duck eggs were the yellow-shafted flicker *(Colaptes auratus)*, the raccoon *(Procyon lotor)*, and the rat snake *(Elaphe obsoleta)*.

Sugden, Lawson G. METABOLIZABLE ENERGY OF SMALL GRAINS FOR MALLARDS. *J. Wildl. Mgmt.* 35(4): 781-785. Oct. 1971. *WR 144: 115*
[Canadian Wildl. Serv., Saskatoon, Saskatchewan, Canada.] Abstract: It is proposed that the composition of waterfowl diets would be expressed better in terms of metabolizable energy (ME) than in volume or weight. The use of formulas for estimating ME from chemical data of waterfowl foods is suggested. Average ME of three barleys fed to captive mallards *(Anas platyrhynchos)* was 3.173 kcal/gram dry matter; of four wheats, 3.526 kcal/gram dry matter; and of fall rye, 3.336 kcal/gram dry matter. Values for barley and wheat are comparable to published values determined for chickens; the value for rye fed to mallards is higher than values published for chickens.

Supryaga, A. M. [AVIOSERPENSOSIS OF WATERFOWL AND SOME ASPECTS OF ITS PROPHYLAXIS.] *Trans. IX Int. Congr. Game Biol.* p. 695-699, 4 figs. 1970. In Russian with English summ. *WR 144: 115*

Thornsberry, William H., and Lewis M. Cowardin. A FLOATING BAIL TRAP FOR CAPTURING INDIVIDUAL DUCKS IN SPRING. *J. Wildl. Mgmt.* 35(4): 837-839, 1 fig. Oct. 1971. *WR 144: 115*
[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.] Abstract: A trap consisting of a floating platform equipped with two spring-driven bails and a trigger mechanism with an adjustable tension was constructed and tested. Forty-five of 89 birds captured in four kinds of traps were taken with this trap. Bail traps were more effective for capturing breeding birds in spring than were nightlighting from a boat, bait traps, cannon nets, or nest traps.

Tuaev, D. G. [WATERFOWL WINTERING AND NESTING GROUNDS AND PROPOSALS FOR CONSERVATION AND RATIONAL USE OF WATERFOWL RESOURCES IN THE AZERBAIJAN SSR.] *Trans. IX Int. Congr. Game Biol.* p. 888-890. 1970. In Russian with English summ. *WR 144: 116*

Vermeer, Kees. CHANGING COMPOSITION OF DUCK NESTS IN RELATION TO LAKE LEVELS. *Canadian Field Natur.* 85(2): 183-184. Apr.-June 1971. *WR 144: 116*
[Canadian Wildl. Serv., Edmonton, Alberta, Canada.]

Weidmann, Uli, and James Darley. THE ROLE OF THE FEMALE IN THE SOCIAL DISPLAY OF MALLARDS. *Anim. Behav.* 19(2): 287-298. May 1971. *WR 144: 116*
[Univ. Leicester, Leicester, England.] Abstract: Experiments showed that the introduction of a strange female mallard to resident groups of three males in spring and autumn usually results in intense social display and often marked aggression while the introduction of a strange male does not. In two of four introductions of three strange males to a resident group social displays occurred. Possible reasons are given why this happened. A temporal analysis of observations and film revealed that the female's facilitatory influence on social display depends on her nod-swimming, while inciting does not have this effect. The effect of other female actions on social display is briefly described. These results contradict claims in the literature that the female plays only an insignificant role in social display. Evidence is given which suggests that social display facilitates directed courtship, as implied in the classical view of social display.

Williams, Murray. THE DISTRIBUTION AND ABUNDANCE OF THE PARADISE SHELDUCK *(TADORNA VARIEGATA, GMELIN)* IN NEW ZEALAND FROM PRE-EUROPEAN TIMES TO THE PRESENT DAY. *Notornis* 18(2): 71-86, 5 figs. June 1971. *WR 144: 116*
[Wildl. Serv., Dep. Internal Affairs, Wellington, New Zealand.]

Wills, Dewey. CHUFA TUBER PRODUCTION AND ITS RELATIONSHIP TO WATERFOWL MANAGEMENT ON CATAHOULA LAKE, LOUISIANA. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 146-153. 1970 [1971]. *WR 144: 116*
[La. Wild Life & Fisheries Comm., Baton Rouge.] Summary: Catahoula Lake provides a wintering area for large concentrations of waterfowl. The lake winters between 150 thousand and 450 thousand waterfowl annually. It provides the most valuable waterfowl habitat in Central Louisiana. During most growing seasons Catahoula Lake produces many tons of tubers which are considered to be the most important waterfowl food on the lake. Production of chufa on Catahoula Lake is dependent upon the annual drawdown of the lake to a dry condition. Therefore, any permanent pooling of water on the lake bed will destroy the value of Catahoula Lake as a waterfowl wintering area.

Young, Colin M. A NESTING RAFT FOR DUCKS. *Canadian Field Natur.* 85(2): 179-181, 2 figs. Apr.-June 1971. *WR 144: 116*
[Laurentian Univ., Sudbury, Ontario, Canada.] Abstract: A simple nesting raft for Mallards and Black Ducks is described. Structural details are discussed, plus the results of five years of field testing.

SWANS & GEESE

Brakhage, George K., Henry M. Reeves, and Richard A. Hunt. THE CANADA GOOSE TAGGING PROGRAM IN WISCONSIN. *Trans. 36th N. Amer. Wildl. & Natur. Resour. Conf.* p. 275-295, 4 figs. 1971. *WR 144: 116*
[Bur. Sport Fisheries & Wildl., Twin Cities, Minn.]

Cowardin, Lewis M., and James C. Bartonek. TRUMPETER SWAN IN KIDDER COUNTY, NORTH DAKOTA. *Prairie Natur.* 1(1): 15. Mar. 1968. *WR 144: 116*
[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.]

Gore, James F., and Calvin J. Barstow. STATUS OF A FREE FLYING, RESIDENT FLOCK OF CANADA GEESE *(BRANTA CANADENSIS)* IN TENNESSEE. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 101-104. 1969 [1970]. *WR 144: 117*
[Tenn. Game & Fish Comm., Nashville.] Abstract: A free flying, resident flock of Canada geese *(Branta canadensis)* has been successfully established in Middle Tennessee. The flock is now composed of over 400 geese. It was initiated in the late 1950's by a private citizen via the release of three or four pair of game farm origin birds on a 1,200 acre estate. This improved pasture type farm, which has several large ponds, is typical of much of the agricultural land usage in Middle Tennessee. The goose population has increased, thus filling available nesting habitat on the original estate and has since expanded to nearby Old Hickory Reservoir. The Tennessee Game and Fish Commission has conducted production, mortality, and banding studies on the flock since 1966. The initial success of this nesting population indicates that the local flock concept has merit for establishment of Canada geese in the Southeast.

Hall, Linda C., and Frank B. McGilvrey. NESTING BY A YEARLING CANADA GOOSE. *J. Wildl. Mgmt.* 35(4): 835-836. Oct. 1971. *WR 144: 117*
[Patuxent Wildl. Res. Center, Laurel, Md.] Abstract: A free-flying Canada goose *(Branta canadensis interior)*, known to be just under a year old, laid a clutch of four eggs at the Patuxent Wildlife Research Center. At least half of the 2-year-old females nest at Patuxent, and almost all of the 3-year-olds nest. As far as we know, this is the first record of nesting by a yearling Canada goose.

Hansen, Henry A., Peter E. K. Shepherd, James G. King, and Willard A. Troyer. THE TRUMPETER SWAN IN ALASKA. *Wildl. Monogr.* no. 26. 83 p., 48 figs. Oct. 1971. *WR 144: 117*
[Bur. Sport Fisheries & Wildl., Washington, D.C.] Ecology of nesting habitat, breeding biology, distribution and population status, and tradition and the population of *Olor buccinator* in the Copper River Basin and the Kenai National Moose Range.

Hanson, W. C., and L. L. Eberhardt. A COLUMBIA RIVER CANADA GOOSE POPULATION, 1950-1970. *AEC Res. & Develop. Rep. BNWL-1606.* 155 p., 8 figs. Aug. 1971. *WR 144: 117*
[Colo. State Univ., Fort Collins.] Study methods, population dynamics, and management of *Branta canadensis moffitti* on the Columbia River are discussed and a model of island goose populations is presented.

Hanson, W. C., and L. L. Eberhardt. A COLUMBIA RIVER CANADA GOOSE POPULATION, 1950-1970. *Wildl. Monogr.* no. 28. 61 p., 16 figs. Dec. 1971. *WR 144: 117*
[Colo. State Univ., Fort Collins.] Major topics: nesting, population dynamics, a model of island goose populations, and management considerations.

Harvey, John Michael. FACTORS AFFECTING BLUE GOOSE NESTING SUCCESS. *Canadian J. Zool.* 49(2): 223-234, illus. 1971. [From Biol. Abstr. 52(13), 1971.] *WR 144: 117*
[Univ. Alberta, Edmonton, Alberta, Canada.] Twenty percent of eggs at McConnell River, N.W.T., were lost, mostly late in incubation after parents deserted the nest. Factors causing desertion may have been inexperience of young geese, or starvation during incubation.

Norman, F. I. BREEDING OF THE BLACK SWAN NEAR WERRIBEE, VICTORIA IN 1963 AND 1970. *Emu* 71(4): 176-178. Oct. 1971. *WR 144: 117*
[Arthur Rylah Inst. Environ. Res., 123 Brown St., Heidelberg, Victoria, Australia.] *"Cygnus atratus."*

Pratt, Jerome J. A BREAKTHROUGH FOR MAUI NENE. *Elepaio* 32(3): 21-22. Sept. 1971. *WR 144: 117*
Report of the first successful reproduction of nene on Maui since the attempt to return them to the island in 1962.

Rutherford, William H. THE CANADA GEESE OF SOUTHEASTERN COLORADO. *Colo. Div. Game, Fish & Parks Tech. Publ.* no. 26. x + 65 p., 13 figs. Sept. 1970. Price $1.00. *WR 144: 118*

The information at hand, problems, and management recommendations for the continued well-being of Canada geese wintering in the Colorado portion of the Arkansas River Valley are summarized.--From intro.

Williams, J. I., and D. O. Trainer. A HEMATOLOGICAL STUDY OF SNOW, BLUE, AND CANADA GEESE. *J. Wildl. Dis.* 7(4): 258-265, 1 fig. Oct. 1971. *WR 144: 118*

[Univ. Wis., Madison.] *"Chen caerulescens* and *Branta canadensis interior."*

SHOREBIRDS, MARSH BIRDS & THEIR ALLIES

Benson, C. W., and J. M. Winterbottom. THE RELATIONSHIP OF THE STRIPED CRAKE *CRECOPSIS EGREGIA* (PETERS) AND THE WHITE-THROATED CRAKE *PORZANA ALBICOLLIS* (VIEILLOT). *Ostrich* 1968: 177-179. Sept. 1968. *WR 144: 118*

[Univ. Mus. Zool., Cambridge, England.]

Blaker, D. RANGE EXPANSION OF THE CATTLE EGRET. *Ostrich*, suppl. no. 9. p. 27-30, 1 fig. July 1971. *WR 144: 118*

[St. Andrews Coll., Grahamstown, Cape Province, South Africa.] Summary: The history of the Cattle Egret in the New World is outlined. It is considered likely that individuals can cross the Atlantic unaided. Ecologically suitable habitats have always existed in South America, so recent habitat changes in these areas cannot have played a dominant role in the species' establishment. The natural hosts of the Cattle Egret in Africa are buffalo, elephant and the larger antelope. In pre-colonial Africa there were huge numbers of herbivores, while South America possessed only 15 species, mostly forest-dwellers. There is an approximate temporal coincidence between the spread of Cattle Egrets and of cattle farming. It is concluded that the increase of cattle farming has been the critical factor facilitating the species' establishment in South America.

Bosselmann, Juergen. ZUNAHME VON KIEBITZBRUTEN--*VANELLUS VANELLUS*--IN DEN NOERDLICHEN GEBIETEN VON RHEINLAND-PFALZ. [INCREASE OF LAPWING BREEDING *VANELLUS VANELLUS* IN THE NORTHERN AREAS OF RHEINLAND-PFALZ (GERMANY).] *Emberiza* 2(2): 66-68. 1970. [From Biol. Abstr. 52(19), 1971. In German.] *WR 144: 118*

[Toepferstrasse 8, Mayen, Germany.]

Curry-Lindahl, Kai. SYSTEMATIC RELATIONSHIPS IN HERONS (ARDEIDAE), BASED ON COMPARATIVE STUDIES OF BEHAVIOUR AND ECOLOGY / A PRELIMINARY ACCOUNT. *Ostrich*, suppl. no. 9. p. 53-70. July 1971. *WR 144: 118*

Feare, C. J. PREDATION OF LIMPETS AND DOGWHELKS BY OYSTERCATCHERS. *Bird Study* 18(3): 121-129, 3 figs. Sept. 1971. *WR 144: 118*

[Culterty Field Sta., Newburgh, Aberdeenshire, Scotland.] The predation of oystercatchers, *Haematopus ostralegus*, on two species of limpet and on dogwhelks on the Yorkshire coast is described.

Fogarty, Michael J. CAPTURING SNIPE WITH MIST NETS. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 78-84, 2 figs. 1969 [1970]. *WR 144: 118*

[Fla. Game & Fresh Water Fish Comm., Gainesville.] During the winters of 1967-68 and 1968-69, 1,015 common snipe *(Capella gallinago)* were banded on a fresh water marsh in north central Florida including 994 which were captured with mist nets. The most productive techniques were driving the birds into nets concentrated in areas of heavy snipe utilization, and intercepting snipe along regular flight lanes. Net type, mesh size, color, and field techniques are described. Other capture methods are briefly discussed.--From abstr.

Gibson, Flash. THE BREEDING BIOLOGY OF THE AMERICAN AVOCET *(RECURVIROSTRA AMERICANA)* IN CENTRAL OREGON. *Condor* 73(4): 444-454, 6 figs. Winter 1971. *WR 144: 119*
[Eastern Wash. State Coll., Cheney.] A study of the breeding biology of the American avocet *(Recurvirostra americana)* was carried out in an alkaline marsh at Summer Lake, Oregon, during the breeding seasons of 1967-1969.--From summ.

Gollop, J. B. SUMMER RECORDS OF HUDSONIAN GODWITS NEAR SASKATOON, SASKATCHEWAN. *Blue Jay* 29(3): 132-134. Sept. 1971. *WR 144: 119*
[Saskatoon, Saskatchewan, Canada.] Report of the occurrence of large numbers of Hudsonian godwits *(Limosa haemastica)* outside the usual route and timing of their southward migration.

Heckenroth, Hartmut, and Ernst Schuez. FUNDE IN EUROPA BERINGTER WEISSSTOERCHE IM ORIENT OESTLICH DER SCHMALFRONT. [FINDINGS OF WHITE STORKS WHICH WERE RINGED IN EUROPE IN THE ORIENT EAST OF THE SMALL FRONT.] *Zool. Abh.* (Dresden) 31. p. 193-203. 1970. [From Biol. Abstr. 52(23), 1971. In German.] *WR 144: 119*
[Moeggingen, Radolfzell, Germany.] *"Ciconia ciconia."*

Henny, Charles J., and Michael R. Bethers. POPULATION ECOLOGY OF THE GREAT BLUE HERON WITH SPECIAL REFERENCE TO WESTERN OREGON. *Canadian Field Natur.* 85 (3): 205-209. July-Sept. 1971. *WR 144: 119*
[Migratory Bird Populations Sta., Laurel, Md.] Abstract: Great Blue Heron *(Ardea herodias)* begin nesting in western Oregon about 1 month earlier than reported from the Philadelphia region and about 2 months earlier than reported from Southern Alberta. The number of young fledged per nesting pair in Oregon was 2.04 in 1970 which was nearly identical to the 1.91 believed necessary to maintain a stable population in the northern United States. The level of *p,p'*DDE reported from two eggs in Oregon was within the same range as that reported from 40 eggs in Alberta. Although some thin-shelled eggs were being laid in Alberta, the observed production was believed sufficient for maintaining a stable population. Production rates reported from a heronry in central California suggested that the population there was also remaining fairly stable.

Heppleston, P. B. THE FEEDING ECOLOGY OF OYSTERCATCHERS *(HAEMATOPUS OSTRALEGUS* L.*)* IN WINTER IN NORTHERN SCOTLAND. *J. Anim. Ecol.* 40(3): 651-672, 5 figs. Oct. 1971. *WR 144: 119*
[Seals Res. Unit, Fisheries Lab., Lowestoft, Suffolk, England.] With an appendix entitled--Soil sampling for earthworms: a review.

Johnson, A. R., and P. Isenmann. L'ÉVOLUTION RÉCENTE DES EFFECTIFS NICHEURS DE LARO-LIMICOLES EN ZONE SAUMÂTRE DE CAMARGUE. [THE RECENT COURSE OF THE LARO-LIMICOLES NESTING STATISTICS FOR THE BRACKISH AREAS OF THE CAMARGUE REGION (SOUTHERN FRANCE).] *Alauda* 39(1): 29-36. 1971. [From Biol. Abstr. 52(23), 1971. In French with English summ.] *WR 144: 119*
[Sta. Biol. Tour Valat, 13-Le Sambuc, France.]

Lippens, L. PREMIERE OBSERVATION D'UN HERON GARDE-BOEUFS *(ARDEOLA IBIS)* EN BELGIQUE. [FIRST OBSERVATION OF *ARDEOLA IBIS* IN BELGIUM.] *Aves* 6(5): 156-158. 1969. [From Biol. Abstr. 52(19), 1971. In French.] *WR 144: 119*
[Boslaan 43, 8300-Knokke, Belgium.]

Martin, F. W., S. O. Williams III, J. D. Newsom, and L. L. Glasgow. ANALYSIS OF RECORDS OF LOUISIANA-BANDED WOODCOCK. *Proc. 23rd Ann. Conf. SE Ass. Game & Fish Comms.* p. 85-96, 2 figs. 1969 [1970]. *WR 144: 119*
[La. State Univ., Baton Rouge.] Location of capture, capture technique, age and sex determination, age and sex composition, geographical distribution of harvest, breeding ground origin, migration routes, band-recovery rates, and mortality of *Philomela minor.*

Mascher, Jan W. A PLUMAGE-PAINTING STUDY OF AUTUMN DUNLIN *CALIDRIS ALPINA* MIGRATION IN THE BALTIC AND NORTH SEA AREAS. *Ornis Scandinavica* 2(1): 27-33. 1971. [From Biol. Abstr. 52(23), 1971.] *WR 144: 120*
[Lasarettet, Sweden.] "As compared with ring recoveries, 1% more reports of observed painted birds were obtained."

McDonald, Cathryn Steed Adams. SOME ECOLOGICAL ASPECTS OF A NESTING COLONY OF HERONS. *Ph.D. thesis, Auburn Univ.* 129 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(6), 1971.] *WR 144: 120*

McNeil, Raymond. LEAN-SEASON FAT IN A SOUTH AMERICAN POPULATION OF BLACK-NECKED STILTS. *Condor* 73(4): 472-475, 1 fig. 1971. *WR 144: 120*
[Univ. Montreal, Montreal, Quebec, Canada.] *"Himantopus mexicanus."*

Morris, A. K. DISTRIBUTION OF THE BLACK BITTERN IN NEW SOUTH WALES. *Emu* 71 (4): 175-176. Oct. 1971. *WR 144: 120*
[Harrison St., Old Toongabbie, NSW, Australia.] *"Dupetor flavicollis."*

Mörzer Bruijns, M. F., and Sj. Braaksma. RESERVES FOR MIGRATING CRANES *GRUS GRUS* L. IN THE NETHERLANDS. *Int. Counc. Bird Preserv. X Bull.* 10: 144-146, illus. 1967. *WR 144: 120*
[State Inst. Natur. Conserv. Res. (RIVON), Zeist, Netherlands.] The basic framework of reserves providing cranes with resting-places in the Netherlands should be expanded to an international framework of reserves.

Pence, Danny B. THE HYPOPI (ACARINA: HYPODERIDAE) FROM THE SUBCUTANEOUS TISSUES OF THE WHITE IBIS, *EUDOCIMUS ALBUS* L. *J. Parasitol.* 57(6): 1321-1323, 6 figs. Dec. 1971. *WR 144: 120*
[La. State Univ., New Orleans.]

Pursglove, Samuel R., Jr., and Gary L. Doster. POTENTIALITIES OF THE WOODCOCK AS A GAME BIRD RESOURCE IN THE SOUTHEASTERN UNITED STATES. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 223-231, 1 fig. 1970 [1971]. *WR 144: 120*
[Univ. Ga., Athens.] Abstract: The American woodcock is a neglected game bird in most southeastern states. Reasons for disregarding this species include: a belief that woodcock are sparse in areas other than Louisiana and southwestern Mississippi; little knowledge pertaining to woodcock habitat; the practice of only hunting woodcock incidentally to other game; and a consensus that quail dogs cannot be used for hunting woodcock. During field activities associated with a range-wide study of parasitism in woodcock, surprisingly high populations were revealed in South Carolina, Georgia, Florida, Alabama, Arkansas, and southeastern Mississippi. Woodcock habitat was characterized and suggestions were presented for alerting southeastern hunters to the presence and value of this game bird.

Salvan, J. OBSERVATIONS NOUVELLES A MADAGASCAR. [NEW OBSERVATIONS IN MADAGASCAR.] *Alauda* 39(1): 37-42. 1971. [From Biol. Abstr. 52(22), 1971. In French.] *WR 144: 120*
[2° R.P. i. Ma., Boite Postale C, Ivato Aeroport, Madagascar.] Decreases in shorebird populations as a result of pollution.

Siegfried, W. R. PLUMAGE AND MOULT OF THE CATTLE-EGRET. *Ostrich*, suppl. no. 9. p. 153-164, 2 figs. July 1971. *WR 144: 120*
[Univ. Cape Town, Rondebosch, Cape Province, South Africa.] Data on the temporal and quantitative spread of moult are presented for the population of cattle egrets *Ardeola ibis* living in the south-western Cape, South Africa.—From summ.

Summerour, Charles William III. A QUANTITATIVE STUDY OF REPRODUCTIVE MORTALITY IN CATTLE EGRETS, *BUBULCUS IBIS*, AND LITTLE BLUE HERONS, *FLORIDA CAERULEA*, NEAR CLIFTONVILLE, NOXUBEE COUNTY, MISSISSIPPI. *Ph.D. thesis, Miss. State Univ.* 69 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(4), 1971.] *WR 144: 120*
A quantitative study of mortality in cattle egrets and little blue herons was conducted in a heronry near Cliftonville, Noxubee County, Mississippi, during

the breeding season of 1970. Age-specific mortality was determined for both cattle egrets and little blue herons from eggs through nine weeks of age. In addition, data were obtained on laying intervals, clutch size and incubation periods.

Thomas, D. G., and A. J. Dartnall. MOULT OF THE CURLEW SANDPIPER IN RELATION TO ITS ANNUAL CYCLE. *Emu* 71(4): 153-158, 6 figs. Oct. 1971. *WR 144: 121*
[9 Lallaby Rd., Moonah, Tasmania.] Summary: *Calidris ferruginea*, in common with other long-distance migrants, moults flight feathers while in winter quarters. It requires 125-130 days to renew the primaries. A schematic representation of the annual cycle has been constructed from the fragmentary data available in the literature. It is shown that the only period free from physiological strain is that spent on the wintering grounds. Thus, the demands on reserves of energy to grow new feathers do not coincide with other events of the annual cycle that also make demands on reserves of energy.

SEABIRDS & THEIR ALLIES

Ainley, David George. COMMUNICATION AND REPRODUCTIVE CYCLES OF THE ADÉLIE PENGUIN. *Ph.D. thesis, Johns Hopkins Univ.* 328 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(5), 1971.] *WR 144: 121*
The behavioral repertoire of Adélie penguins, *Pygoscelis adeliae*, at Cape Crozier, Ross Island, Antarctica was described and studied, including relationships between comfort behaviors, displays, social grouping, and reproductive cycles. Reference is made when possible to birds of known-age, 1-8 years.

Andersson, Åke. FOOD HABITS AND PREDATION OF AN INLAND-BREEDING POPULATION OF THE HERRING GULL *LARUS ARGENTATUS* IN SOUTHERN SWEDEN. *Ornis Scandinavica* 1 (2): 75-81, illus. 1970. [From Biol. Abstr. 52(23), 1971.] *WR 144: 121*
[Stockholm, Sweden.]

Andersson, Malte. BREEDING BEHAVIOUR OF THE LONG-TAILED SKUA *STERCORARIUS LONGICAUDUS* (VICILLOT). *Ornis Scandinavica* 2(1): 35-54, illus. 1971. [From Biol. Abstr. 52(23), 1971.] *WR 144: 121*
[Univ. Gothenburg, Gothenburg, Sweden.]

Bengtson, Sven-Axel. BREEDING SUCCESS OF THE ARCTIC TERN, *STERNA PARADISAEA* (PONTOPPIDAN), IN THE KONGSFJORD AREA, SPITSBERGEN IN 1967. *Norw. J. Zool.* 19 (1): 77-82, illus. 1971. [From Biol. Abstr. 52(23), 1971.] *WR 144: 121*
[Ecol. Bldg., Lund, Sweden.]

Clapp, Roger B. A SPECIMEN OF JOUANIN'S PETREL FROM LISIANSKI ISLAND, NORTHWESTERN HAWAIIAN ISLANDS. *Condor* 73(4): 490. Winter 1971. *WR 144: 121*
[Univ. Md., College Park.] *"Bulweria fallax."*

Cogswell, H. L. GULLS AND SOLID WASTE DISPOSAL IN THE SAN FRANCISCO BAY AREA, CALIFORNIA. *Proc. World Conf. Bird Hazards Aircraft* (Kingston, Ontario). p. 421-438, 14 figs. 1970. In English with French summ. *WR 144: 121*
[Calif. State Coll., Hayward.] *"Larus glaucescens, L. occidentalis, L. argentatus, L. californicus, L. delawarensis, L. thayeri, L. hyperboreus."*

Elliott, C. C. H. ECOLOGICAL CONSIDERATIONS AND THE POSSIBLE SIGNIFICANCE OF WEIGHT VARIATIONS IN THE CHICKS OF THE GREAT SHEARWATER ON GOUGH ISLAND. *Ostrich*, suppl. no. 8. p. 385-396, 5 figs. 1970. *WR 144: 121*
[Percy Fitzpatrick Inst., Cape Town, South Africa.]

Elliott, C. C. H. ANALYSIS OF THE RINGING AND RECOVERIES OF THREE MIGRANT TERNS. *Ostrich*, suppl. no. 9. p. 71-82, 6 figs. July 1971. *WR 144: 121*
[Percy Fitzpatrick Inst., Cape Town, South Africa.] *"Sterna hirundo, S. paradisaea* and *S. sandvicensis."*

Fisher, Harvey I. EXPERIMENTS ON HOMING IN LAYSAN ALBATROSSES, *DIOMEDEA IMMUTABILIS*. *Condor* 73(4): 389-400, 3 figs. Winter 1971. *WR 144: 122*
[Southern Ill. Univ., Carbondale.] Evidence on homing by Laysan albatrosses in various stages of the life cycle, and some views on cues and the age at which they are used.

Gould, Patrick Jerry. INTERACTIONS OF SEABIRDS OVER THE OPEN OCEAN. *Ph.D. thesis, Univ. Ariz.* 120 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(5), 1971.] *WR 144: 122*
Analysis was made of the structure, composition, and integration of a completely oceanic population of seabirds in the north-central and eastern Pacific. Data indicated that the distribution and abundance of many seabird species were related to the physical characteristics of the surface waters over which the birds foraged.

Grant, P. R. INTERACTIVE BEHAVIOUR OF PUFFINS *(FRATERCULA ARCTICA* L.) AND SKUAS *(STERCORARIUS PARASITICUS* L.). *Behaviour* 40(3-4): 263-281, 4 figs. 1971. In English with French summ. *WR 144: 122*
[Univ. Oxford, Oxford, England.] Puffins fly to their burrows with food (fish) in their beaks for the single chick they raise. Skuas chase puffins and induce them to drop their food. If the skuas do not catch the falling food before it reaches the ground gulls drive the skuas away from the food and secure it for themselves. These interactions were studied quantitatively for two weeks at a breeding colony of puffins at Vík on the mainland of Iceland.--From summ.

Grubb, Thomas Christman, Jr. OLFACTORY NAVIGATION IN LEACH'S PETREL AND OTHER PROCELLARIIFORM BIRDS. *Ph.D. thesis, Univ. Wis.* 156 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(6), 1971.] *WR 144: 122*
"Oceanodroma leucorhoa, Oceanites oceanicus, Puffinus gravis, and *P. griseus."*

Hailman, Jack P. THE ROLE OF STIMULUS-ORIENTATION IN ELICITING THE BEGGING RESPONSE FROM NEWLY-HATCHED CHICKS OF THE LAUGHING GULL *(LARUS ATRICILLA). Anim. Behav.* 19(2): 328-335, 5 figs. May 1971. *WR 144: 122*
[Univ. Wis., Madison.] Abstract: The begging rate of naive laughing gull chicks *(Larus atricilla)* increases with verticality of the stimulus-object. Oblique and vertical stimuli projecting from above receive higher rates than their mirror images from below. Stimuli transecting the whole field evoke intermediate rates. The differential effectiveness of down- and up-pointing stimuli is a basis for the chick's discrimination between the parent's beak and legs. Results demonstrate interobserver reliability, response-waning, and superior effectiveness of three- over two-dimensional stimuli. Results also show that the chick's perception is too complex to be encoded by a unit with a vertical-bar receptive-field organization, such as that in the cat's visual system.

Hilden, Olavi. OCCURRENCE, MIGRATION AND COLOUR PHASES OF THE ARCTIC SKUA *(STERCORARIUS PARASITICUS)* IN FINLAND. *Ann. Zool. Fenn.* 8(2): 223-230, illus. 1971. [From Biol. Abstr. 52(23), 1971.] *WR 144: 122*
[Univ. Helsinki, Helsinki, Finland.]

Jarvis, M. J. F. INTERACTIONS BETWEEN MAN AND THE SOUTH AFRICAN GANNET *SULA CAPENSIS. Ostrich*, suppl. no. 7. p. 497-513, 7 figs. 1970. *WR 144: 122*
[Percy Fitzpatrick Inst., Cape Town, South Africa.]

Kadlec, John A. EFFECTS OF INTRODUCING FOXES AND RACCOONS ON HERRING GULL COLONIES. *J. Wildl. Mgmt.* 35(4): 625-636, 3 figs. Oct. 1971. *WR 144: 122*
[Univ. Mich., Ann Arbor.] Abstract: Red foxes *(Vulpes fulva)* and raccoons *(Procyon lotor)* released at colonies of herring gulls *(Larus argentatus)* on islands off the Massachusetts coast effectively eliminated the production of young gulls. Annual predator introductions for 2-4 years caused major reductions in colony size and occasionally total abandonment of the island as a colony site. Observations of the experimental islands for 2 years after cessation of predator

introductions showed slow repopulation of the islands and lower breeding success than on control islands. The size of the regional population was reduced largely because of the movements of gulls off the experimental islands. The introduced predators are, in most cases, difficult to maintain on the islands; this restricts their utility in population management.

Langham, N. P. E. SEASONAL MOVEMENTS OF BRITISH TERNS IN THE ATLANTIC OCEAN. *Bird Study* 18(3): 155-175, 11 figs. Sept. 1971. *WR 144: 123*
[Univ. Penang, Penang, Malaysia.] The recoveries up to November 1966 of sandwich, roseate, common and arctic terns ringed in Britain were analysed. All juveniles recovered more than five miles from their natal colony, and adult recoveries, excluding recaptures, were included in the analysis.--From summ.

Lippens, L. LA PRÉSENCE AU ZWIN, À KNOKKE (LITTORAL BELGE), D'UN HYBRIDE PROBABLE DE GOELAND BOURGMESTRE *(LARUS HYPERBOREUS)* ET DU GOELAND ARGENTE *(LARUS ARGENTATUS)*. [THE PRESENCE OF A PROBABLE HYBRID OF THE GLAUCOUS GULL *(LARUS HYPERBOREUS)* AND THE HERRING GULL *(LARUS ARGENTATUS)* AT ZWIN IN KNOKKE (BELGIAN COAST).] *Aves* 7(4): 105-106. 1970. [From Biol. Abstr. 52(22), 1971. In French.] *WR 144: 123*
[Boslaan, Knokke, Belgium.]

McCaskie, Guy. A CAPE PETREL OFF MONTEREY, CALIFORNIA. *Calif. Birds* 1(1): 39-40, illus. 1970. [From Biol. Abstr. 52(23), 1971.] *WR 144: 123*
[San Diego Natur. Hist. Mus., San Diego, Calif.] First report of *Daption capensis* north of the equator in the North Pacific Ocean.

McCaskie, Guy. THE OCCURRENCES OF FOUR SPECIES OF PELECANIFORMES IN THE SOUTHWESTERN UNITED STATES. *Calif. Birds* 1(4): 117-142, illus. 1970. [From Biol. Abstr. 52(23), 1971.] *WR 144: 123*
[San Diego Natur. Hist. Mus., San Diego, Calif.] *"Pelecanus occidentalis, Sula nebouxii, S. leucogaster* and *Fregata magnificens."*

Nehls, Hans Wolfgang. UEBER DEN EINFLUSS DES BRUTZYKLUS AUF DIE SCHEITELFEDERMAUSER DER BRANDSEESCHWALBE *(STERNA SANDVICENSIS)*. [ON THE EFFECT OF THE BREEDING CYCLE ON THE MOLT OF THE HEAD FEATHERS OF THE SANDWICH TERN *(STERNA SANDVICENSIS)*.] *J. Ornithol.* 112(2): 230-25., illus. 1971. [From Biol. Abstr. 52(22), 1971. In German.] *WR 144: 123*
[Univ. Rostock, Freiligrathst. 7-8, Rostock, Germany.]

Pearson, J. C., and G. Prévot. *GALACTOSOMUM TIMONDAVIDI* SP. N. (TREMATODA: HETEROPHYIDAE) FROM *LARUS ARGENTATUS*, WITH A NOTE ON THE METACERCARIA. *J. Parasitol.* 57(6): 1227-1230, 3 figs. Dec. 1971. *WR 144: 123*
[Univ. Queensland, Brisbane, Australia.]

Shaughnessy, P. D. FREQUENCY OF THE WHITE PHASE OF THE SOUTHERN GIANT PETREL, *MACRONECTES GIGANTEUS* (GMELIN). *Australian J. Zool.* 19(1): 77-83, illus. 1971. [From Biol. Abstr. 52(22), 1971.] *WR 144: 123*
[Univ. Alaska, College.] Published data on frequencies of white-phase *M. giganteus* in breeding colonies and at sea are reviewed and compared with observations made at colonies on Macquarie Island and at 3 locations in Antarctica.

Vermeer, Kees. SOME BREEDING ASPECTS OF HERRING GULLS AT KAWINAW LAKE, MANITOBA. *Blue Jay* 29(4): 207-208. Dec. 1971. *WR 144: 123*
[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] Measurements of *Larus argentatus* eggs in England, Denmark, Norway and Canada are compared.

Warham, John. ASPECTS OF BREEDING BEHAVIOUR IN THE ROYAL PENGUIN *EUDYPTES CHRYSOLOPHUS SCHLEGELI*. *Notornis* 18(2): 91-115. June 1971. [From J. Mammal. 52(4, suppl.), 1971.] *WR 144: 123*

Williams, Lovett E., Jr., and Larry L. Martin. NESTING POPULATIONS OF BROWN PELICANS IN FLORIDA. *Proc. 24th Ann. Conf. SE Ass. Game & Fish Comms.* p. 154-169, 8 figs. 1970 [1971]. *WR 144: 124*
[Fla. Game & Fresh Water Fish Comm., Gainesville.] The maximum numbers of nests counted during 1968, 1969, and 1970 was 6,926, 6,100, and 7,690 respectively. This represents a conservative estimate of 12,200 to 15,380 brown pelicans nesting during the period of the census. Prebreeding age classes were not counted.--From abstr.

HAWKS & OWLS

Boeker, Erwin L., and Thomas D. Ray. GOLDEN EAGLE POPULATION STUDIES IN THE SOUTHWEST. *Condor* 73(4): 463-467. Winter 1971. *WR 144: 124*
[Ariz. State Univ., Tempe.]

Bosselmann, Juergen, and Klaus Schneider. ANSAMMLUNG UND UEBERWINTERUNG DES ROTMILANS--*MILVUS MILVUS*--IM KREIS MAYEN/EIFEL. [MASSING AND OVERWINTERING OF THE RED KITE *MILVUS MILVUS* IN THE MAYEN/EIFEL AREA.] *Emberiza* 2(2): 61-65, illus. 1970. [From Biol. Abstr. 52(19), 1971. In German.] *WR 144: 124*
[Toepferstrasse 8, Mayen, Germany.]

Broekhuysen, G. J., and W. R. Siegfried. DIMENSIONS AND WEIGHT OF THE STEPPE BUZZARD IN SOUTHERN AFRICA. *Ostrich*, suppl. no. 9. p. 31-39, 4 figs. July 1971. *WR 144: 124*
[Univ. Cape Town, Rondebosch, Cape Province, South Africa.] *"Buteo buteo vulpinus."*

Brown, Woodward H. WINTER POPULATION TRENDS IN THE RED-SHOULDERED HAWK. *Amer. Birds* 25(5): 813-817, 2 figs. Oct. 1971. *WR 144: 124*
[4815 Ingersoll Ave., Des Moines, Iowa.] Analysis of nearly 10,000 Christmas Count reports in Audubon Field Notes for the years 1950-69 shows a decrease in the red-shouldered hawk winter populations in all states except California, where there has been no significant change, and West Virginia, where there has been an increase in recent years.--From summ.

Catuneanu, I., M. Hamar, Felicia Theiss, G. Korodi, and L. Manolache. IMPORTANTA ECONOMICA A CIUFULUI DE PADURE *ASIO OTUS OTUS* L. IN LUPTA IMPOTRIVA DAUNATORILOR AGRICOLI. [ECONOMIC IMPORTANCE OF THE LONG-EARED OWL *(ASIO OTUS OTUS* L.*)* IN THE CONTROL OF PLANT PESTS.] *An. Inst. Cercet. Pentru Prot. Plant.* 6: 433-445, illus. 1968. [From Biol. Abstr. 52(22), 1971. In Romanian with English summ.] *WR 144: 124*
[Inst. Cercet. Pentru Prot. Plant., Bucharest, Romania.]

Cheltsov-Bebutov, A. M. [BIRDS OF PREY AND GAME MANAGEMENT.] *Trans. IX Int. Congr. Game Biol.* p. 449-457, 1 fig. 1970. In Russian with English summ. *WR 144: 124*
[Mosk. Gosudarst. Univ., Moscow, USSR.]

Dathe, Heinrich. DER SPERBER, *ACCIPITER NISUS* (L.), ALS BRUTVOGEL IM SCHLOSSPARK BERLIN-FRIEDRICHSFELDE. [THE SPARROW HAWK, *ACCIPITER NISUS* (L.), AS A BREEDING BIRD IN THE BERLIN FRIEDRICHSFELDE PARK.] *Milu* 2(6): 645-646. 1969. [From Biol. Abstr. 52(21), 1971. In German.] *WR 144: 124*

Fontaine, S. NIDIFICATION DU HIBOU DES MARAIS *(ASIO FLAMMEUS)* EN HAUTES FAGNES. [NESTS OF THE MARSH OWL *(ASIO FLAMMEUS)* IN HAUTES FAGNES.] *Aves* 6(5): 143-147, illus. 1969. [From Biol. Abstr. 52(19), 1971. In French.] *WR 144: 124*
[Univ. Liege, Liege, Belgium.]

Gargett, V. SOME OBSERVATIONS ON BLACK EAGLES IN THE MATOPOS, RHODESIA. *Ostrich*, suppl. no. 9. p. 91-124, 1 fig., 2 pls. July 1971. *WR 144: 125*
[49 Leander Ave., Hillside, Bulawayo, Rhodesia.] Summary: Observations made on the Black Eagles [*Aquila verreauxii*] of the Matopos, Rhodesia, from 1959 to the end of 1969 have been summarised in this preliminary report. Topics discussed include breeding season and the breeding unit; territory and intra- and inter-specific contacts; courtship, display and mating; nest sites, building and use of alternate nests; clutch size; laying and incubation; hatching; the nestling period and fledging; the post-fledging period; the "Cain and Abel" conflict; breeding success; adult behaviour; prey and feeding; and moult. More than 60 verbatim records made by team members are given together with tables, diagrams and sketch maps.

Glue, David E. RINGING RECOVERY CIRCUMSTANCES OF SMALL BIRDS OF PREY. *Bird Study* 18(3): 137-146. Sept. 1971. *WR 144: 125*
[British Trust Ornithol., Beech Grove, Tring, Hertfordshire, England.]

Harris, Wayne C. RED-TAILED HAWK NESTING SUCCESS, 1971. *Blue Jay* 29(4): 203. Dec. 1971. *WR 144: 125*
[Raymore, Saskatchewan, Canada.] "The nesting success of the red-tailed hawk (*Buteo jamaicensis*) in an area around Raymore, Saskatchewan decreased tremendously in 1971. Only 37.5% of the nests under observation were successful, and the number of young fledged from these successful nests also dropped considerably compared to previous years."

Haucke, Harry H. PREDATION BY A WHITE-TAILED HAWK AND A HARRIS HAWK ON A WILD TURKEY POULT. *Condor* 73(4): 475. Winter 1971. *WR 144: 125*
[Tex. A&M Univ., College Station.]

Herman, Steven G. THE PEREGRINE FALCON DECLINE IN CALIFORNIA / II. BREEDING STATUS IN 1970. *Amer. Birds* 25(5): 818-820. Oct. 1971. *WR 144: 125*
[Univ. Calif., Santa Barbara.] The breeding population of peregrine falcons in California is reduced at least 95% from the numbers that nested 25 years ago. The total number of successful pairs was under five in California in 1970.

Hickman, Gary L. PRAIRIE FALCONS AND RED-TAILED HAWKS REARING YOUNG IN INACTIVE GOLDEN EAGLE NESTS. *Condor* 73(4): 490. Winter 1971. *WR 144: 125*
[Bur. Sport Fisheries & Wildl., Vero Beach, Fla.]

Holgersen, Norman. THE PREY OF SOME DELAWARE OWLS. *Atl. Natur.* 25(4): 176. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 125*

Khajuria, H., and D. K. Ghosal. SMALL MAMMALS EATEN BY THE BARN OWL, *TYTO ALBA* (SCOPOLI). *Mammalia* 34(4): 718-720. Dec. 1970. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 125*

Levy, Seymour H. THE MISSISSIPPI KITE IN ARIZONA. *Condor* 73(4): 476. Winter 1971. *WR 144: 125*
[Rt. 9, Box 960, Tucson, Ariz.] *"Iotinia misisippiensis."*

Mannes, Peter. BEGATTUNG BEI DER WALDOHREULE *(ASIO OTUS)*. [MATING OF THE LONG-EARED OWL *(ASIO OTUS)*.] *J. Ornithol.* 112(2): 231-232. 1971. [From Biol. Abstr. 52(22), 1971. In German.] *WR 144: 125*
[Lauenburger St. 32, Goslar, Germany.]

Maser, Chris, E. Wayne Hanmer, and Stanley H. Anderson. FOOD HABITS OF THE BURROWING OWL IN CENTRAL OREGON. *Northwest Sci.* 45(1): 19-26. Feb. 1971. [From J. Mammal. 52(3, suppl.), 1971.] *WR 144: 125*

Meng, Heinz. THE SWEDISH GOSHAWK TRAP. *J. Wildl. Mgmt.* 35(4): 832-835, 1 fig. Oct. 1971. *WR 144: 126*
[State Univ. Coll., New Paltz, N.Y.] Abstract: Hawk and owl predation at game farms was successfully controlled by the use of the Swedish goshawk trap. The raptors are caught alive and uninjured. Comparisons are made between live-trapping, pole-trapping, and shooting. Trap construction is described.

Mienis, H. K. *THEBA PISANA* IN PELLETS OF AN ISRAELIAN OWL. *Basteria* 35 (1/4): 73-75. 1971. [From Biol. Abstr. 52(24), 1971.] *WR 144: 126*
[Hebrew Univ., Jerusalem, Israel.] *"Athene noctua lilith."*

Nielsen, Bent Pors, and Steen Christensen. OBSERVATIONS ON THE AUTUMN MIGRATION OF RAPTORS IN THE LEBANON. *Ornis Scandinavica* 1(2): 65-73. 1970. [From Biol. Abstr. 52(23), 1971.] *WR 144: 126*
[Copenhagen, Denmark.]

Olendorff, Richard Rea. MORPHOLOGICAL ASPECTS OF GROWTH IN THREE SPECIES OF HAWKS. *Ph.D. thesis, Colo. State Univ.* 475 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(5), 1971.] *WR 144: 126*
The first extensive description of the growth of any falconiform bird. Growth patterns of ferruginous hawks *(Buteo regalis)*, red-tailed hawks *(Buteo jamaicensis)*, and Swainson's hawks *(Buteo swainsoni)* are explored.

Rothkopf, Dorothee. EINE ANALYSE VON GEWOELLEN DER SCHLEIEREULE, *TYTO ALBA*, AUS DER EIFEL. [AN ANALYSIS OF UNDIGESTED MATERIAL FROM *TYTO ALBA* FROM THE EIFEL REGION (GERMANY).] *Bonn. Zool. Beitr.* 21(1/2): 63-82, illus. 1970. [From Biol. Abstr. 52(23), 1971. In German.] *WR 144: 126*
[Mus. A. Koenig, Bonn, Germany.]

Smith, Dwight G. POPULATION DYNAMICS, HABITAT SELECTION, AND PARTITIONING OF BREEDING RAPTORS IN THE EASTERN GREAT BASIN OF UTAH. *Ph.D. thesis, Brigham Young Univ.* 272 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(6), 1971.] *WR 144: 126*

Soares, A. A. RAPINACEOS DE PORTUGAL: I. FALCONIFORMES: CATÁLOGO DA COLECÇÃO DO MUSEU BOCAGE COM ESTUDO DAS COLECÇÕES DOS MUSEOS DE ZOOL. DAS UNIV. DO PORTO E COIMBRA. [RAPTORS FROM PORTUGAL: I. FALCONIFORMES: CATALOGUE OF THE BOCAGE MUSEUM COLLECTION WITH A STUDY OF THE COLLECTIONS OF THE ZOOLOGICAL MUSEUMS OF THE UNIVERSITIES OF PORTO AND COIMBRA.] *Arq. Mus. Bocage* 2(15): 205-316, illus. 1970. [From Biol. Abstr. 52(22), 1971. In Portuguese with English summ.] *WR 144: 126*
[Mus. Bocage, Lisboa, Lisbon, Portugal.]

Trollope, Jeffrey. SOME ASPECTS OF BEHAVIOUR AND REPRODUCTION IN CAPTIVE BARN OWLS *(TYTO ALBA ALBA)*. *Avicult. Mag.* 77(4): 117-125, 2 figs. + 4 pls. July-Aug. 1971. *WR 144: 126*
[Hounslow, Middlesex, England.] Breeding information on barn owls, with observations on behavior of adults and behavior and development of the young.

Ulfstrand, Staffan. A PROCEDURE FOR ANALYSING PLUMAGE VARIATION AND ITS APPLICATION TO A SERIES OF SOUTH SWEDISH COMMON BUZZARDS *BUTEO BUTEO* (L.). *Ornis Scandinavica* 1(2): 107-113, illus. 1970. [From Biol. Abstr. 52(23), 1971.] *WR 144: 126*
[Ecol. Bldg., Lund, Sweden.]

Ward, F. Prescott. THIAMINE DEFICIENCY IN A PEREGRINE FALCON. *J. Amer. Vet. Med. Ass.* 159(5): 599-601, 1 fig. 1 Sept. 1971. *WR 144: 126*
[Med. Res. Lab., Edgewood Arsenal, Md.]

Weir, D. N. MORTALITY OF HAWKS AND OWLS IN SPEYSIDE. *Bird Study* 18(3): 147-154, 1 fig. Sept. 1971. *WR 144: 127*
[English Charlie's, Aviemore, Inverness-shire, Scotland.] From 1964 to 1969, a field study of deaths and disablements of fledged hawks and owls was made in an area of approximately 270 sq. miles in East Inverness-shire: 74 cases (35 hawks and 39 owls) were recorded. This study complements information on deaths of wild raptors presented in recent laboratory studies.--From summ.

Wiemeyer, Stanley N. REPRODUCTIVE SUCCESS OF POTOMAC RIVER OSPREYS--1970. *Chesapeake Sci.* 12(4): 278-280, 1 fig. Dec. 1971. *WR 144: 127*
[Patuxent Wildl. Res. Center, Laurel, Md.] Abstract: Osprey reproductive success on the Potomac River during 1970 is described. Thirty-five percent of the accessible active nests fledged young and only 0.70 young were fledged per active nest. Egg failure was the major cause of poor success. Reproduction was below that considered normal for a stable population.

Wiley, Robert W., and Eric G. Bolen. EAGLE-LIVESTOCK RELATIONSHIPS: LIVESTOCK CARCASS CENSUS AND WOUND CHARACTERISTICS. *Southwest. Natur.* 16(2): 151-169, 5 figs. 15 Nov. 1971. *WR 144: 127*
[Tex. Tech Univ., Lubbock.] Review of the physical damage eagles inflict when attacking their prey. With these and other descriptions of wounds as guides, a field appraisal of livestock succumbing to predation on western rangelands is reported.--From abstr.

BLACKBIRDS, STARLINGS, CROWS

Baehrmann, Udo. VERGLEICHENDE OSTEOLOGISCHE UNTERSUCHUNGEN AN *STURNUS VULGARIS VULGARIS* L. UND ANDEREN ARTEN UNTER BESONDERER BERUECKSICHTIGUNG DER PROPORTIONIERUNG DER VORDEREN UND HINTEREN EXTREMITAET (AVES, STURNIDAE). [COMPARATIVE OSTEOLOGICAL INVESTIGATIONS ON *STURNUS VULGARIS VULGARIS* L. AND OTHER SPECIES UNDER SPECIAL CONSIDERATION OF THE PROPORTIONS OF THE ANTERIOR AND POSTERIOR EXTREMITIES (AVES, STURNIDAE).] *Zool. Abh.* (Dresden) 31. p. 11-49, illus. 1970. [From Biol. Abstr. 52(23), 1971. In German.] *WR 144: 127*
[Lutherstrasse 46, Lutherstadt Wittenberg, Germany.]

DeHaven, Richard W., and Joseph L. Guarino. BREEDING OF STARLINGS USING NEST-BOXES AT DENVER, COLORADO. *Colo. Field Ornithol.* no. 8. 10-page reprint, 1 fig. Summer 1970. *WR 144: 127*
[P.O. Box C, Davis, Calif.]

Kuroda, Nagahisa. [MEASUREMENTS, STOMACH CONTENTS AND INTESTINAL PARASITES IN 13 JUNGLE CROWS *(CORVUS LEVAILLANTII JAPONONENSIS)* OBTAINED IN TOKYO.] *Misc. Rep. Yamashina's Inst. Ornithol.* 6(1/2): 73-81. 1970. [From Biol. Abstr. 52 (19), 1971. In Japanese with English summ.] *WR 144: 127*
[Yamashina's Inst. Ornithol., Tokyo, Japan.]

Meanley, Brooke. BLACKBIRDS AND THE SOUTHERN RICE CROP. *Bur. Sport Fisheries & Wildl. Resour. Publ.* 100. 64 p., 40 figs. 1971. For sale by Supt. Documents, GPO, Washington, D.C. Price 35¢. *WR 144: 127*
[Patuxent Wildl. Res. Center, Laurel, Md.] Information about the extent of the rice-blackbird problem in the South. The habits, distribution, and movements of the blackbird populations involved, and appropriate methods available for reducing crop losses are discussed.

Nankinov, Demeter. [BEHAVIOUR OF STARLINGS *(STURNUS VULGARIS* L.) IN THEIR WINTER HOMES.] *Biologia* (Bratislava) 26(2): 153-155. 1971. [From Biol. Abstr. 52(20), 1971. In Russian with English summ.] *WR 144: 127*
[Leningr. Statnej Univ., Leningrad, USSR.]

Power, Dennis M. GEOGRAPHIC VARIATION OF RED-WINGED BLACKBIRDS IN CENTRAL NORTH AMERICA. *Univ. Kans. Publ. Mus. Natur. Hist.* 19(1): 1-83, illus. 1970. [From Biol. Abstr. 52(20), 1971.] *WR 144: 128*
[Roy. Ont. Mus., Toronto, Ontario, Canada.] *"Agelaius phoeniceus."*

Power, Dennis M. RANGE EXPANSION OF BREWER'S BLACKBIRD: PHENETICS OF A NEW POPULATION. *Canadian J. Zool.* 49(2): 175-183, illus. 1971. [From Biol. Abstr. 52(13), 1971.] *WR 144: 128*
[Roy. Ont. Mus., Toronto, Ontario, Canada.] *Euphagus cyanocephalus* is rapidly expanding its range eastward across Ontario and parts of the USA. Differences in population variability seem slight and do not show the alterations in genetic variability that would be expected during a Carsonian population flush or a partial founder effect.

Sapetina, I. M. [THE PREDATION OF CROW *(CORVUS CORONE)* IN THE FLOOD-LAND HABITATS OF THE MIDDLE ZONE OF THE EUROPEAN PART OF THE USSR.] *Trans. IX Int. Congr. Game Biol.* p. 563-566. 1970. In Russian with English summ. *WR 144: 128*

Wacha, Richards S., and Gerald D. Schmidt. HELMINTH PARASITES OF THE BLACK-BILLED MAGPIE, *PICA PICA HUDSONIA*, IN NORTHEASTERN COLORADO. *Proc. Helminthol. Soc. Washington* 38(2): 268. 1971. [From Biol. Abstr. 52(24), 1971.] *WR 144: 128*
[Carroll Coll., Helena, Mont.]

Yeager, Robert C. THE DAY THE STARLINGS CAME. *Pest Control* 39(8): 30, 32, 53, illus. Aug. 1971. *WR 144: 128*
[Rose Exterminator Co., Cincinnati, Ohio.] Tall, complicated pipe racks were used as roosting areas for pigeons, starlings, and sparrows. The birds were eliminated in all instances by the use of poison perches placed according to approach and landing patterns of each species.

OTHER BIRDS

Andersson, J. Sune, and Stig A. L. Wester. LENGTH OF WING, BILL, AND TARSUS AS A CHARACTER OF SEX IN THE DIPPER *CINCLUS CINCLUS*. *Ornis Scandinavica* 2(1): 75-79, illus. 1971. [From Biol. Abstr. 52(23), 1971.] *WR 144: 128*
[Vastervik, Sweden.] Dippers can be sexed by wing length.

Arnold, Keith A. THREE ADDITIONAL SPECIMENS OF THE EARED POOR-WILL FROM THE STATE OF GUERRERO, MÉXICO. *Condor* 73(4): 475. Winter 1971. *WR 144: 128*
[Tex. A&M Univ., College Station.] *"Otophanes maleodii."*

Austin, George T. ON THE OCCURRENCE OF EASTERN WOOD WARBLERS IN WESTERN NORTH AMERICA. *Condor* 73(4): 455-462, 1 fig. Winter 1971. *WR 144: 128*
[Univ. Ariz., Tucson.]

Barlow, Jon C., and Roland H. Wauer. THE GRAY VIREO *(VIREO VICINIOR* COUES; AVES: VIREONIDAE) WINTERING IN THE BIG BEND REGION, WEST TEXAS. *Canadian J. Zool.* 49(6): 953-955. 1971. [From Biol. Abstr. 52(23), 1971.] *WR 144: 128*
[Roy. Ont. Mus., Toronto, Ontario, Canada.]

Collias, Nicholas E., and Elsie C. Collias. COMPARATIVE BEHAVIOUR OF WEST AFRICAN AND SOUTH AFRICAN SUBSPECIES OF *PLOCEUS CUCULLATUS*. *Ostrich*, suppl. no. 9. p. 41-52, 4 pls. July 1971. *WR 144: 128*
[Univ. Calif., Los Angeles.]

Courtney, John. BREEDING OF THE RAINBOWBIRD AT SWAN VALE, NSW. *Emu* 71(4): 172-174. Oct. 1971. *WR 144: 128*
['Ashgrove', Swan Vale, via Glen Innes, NSW, Australia.] Description of nest-site and nest, clutch-size and laying, incubation, and nestling period of the rainbowbird, *Merops ornatus*.

Courtney, John. BREEDING OF THE RED-RUMPED KINGFISHER AT SWAN VALE, NSW. *Emu* 71(4): 174-175. Oct. 1971. *WR 144: 129*
['Ashgrove', Swan Vale, via Glen Innes, NSW, Australia.] Description of nest-site, nest-tunnel, clutch-size, laying, incubation, nestling, breeding season, and breeding success of *Halcyon phyrrhopygia.*

Craig, Jean T. KENTUCKY WARBLER IN SAN DIEGO. *Calif. Birds* 1(1): 37-38, illus. 1970. [From Biol. Abstr. 52(23), 1971.] *WR 144: 129*
[712 Tarento Drive, San Diego, Calif.] *"Oporornis formosus."*

Farkas, Tibor. *MONTICOLA BENSONI*, A NEW SPECIES FROM SOUTH-WESTERN MADAGASCAR. *Ostrich*, suppl. no. 9. p. 83-90, 3 figs., 2 pls. July 1971. *WR 144: 129*
[Univ. Cape Town, Rondebosch, Cape Province, South Africa.] Description, distribution, habitat and behavior.

Garrido, Orlando H. UNA NUEVA SUBESPECIE DEL *VIREO GUNDLACHII* (AVES: VIREONIDAE), PARA CUBA. [A NEW SUBSPECIES OF *VIREO GUNDLACHII* (AVES: VIREONIDAE), FOR CUBA.] *Poeyana Inst. Biol. Habana Ser. A* 81. p. 1-8. 1971. [From Biol. Abstr. 52(20), 1971. In Spanish with English summ.] *WR 144: 129*
[Lab. Vertebr., Inst. Biol., Acad. Cienc. Cuba, Havana, Cuba.]

Hald-Mortensen, Poul. EN DAG I VENDEHALSEPARRETS *(JYNX TORQUILLA)* UNGEFODRINGSPERIODE. [ONE DAY IN THE NESTLING PERIOD OF THE WRYNECK *JYNX TORQUILLA).*] *Flora Fauna* 77(1): 1-12, illus. 1971. [From Biol. Abstr. 52(20), 1971. In Danish with English summ.] *WR 144: 129*
[Kobenhavns Univ., Copenhagen, Denmark.]

Haneda, Kenzo, and Seiki Koshihara. [LIFE HISTORY OF THE PALLAS'S DIPPER *CINCLUS PALLASII HONDOENSIS.*] *Bull. Inst. Natur. Educ. Shiga Heights* 8: 49-57, illus. 1969. [From Biol. Abstr. 52(22), 1971. In Japanese with English summ.] *WR 144: 129*
[Shinshu Univ., Matsumoto, Japan.]

Haneda, Kenzo, and Etsuko Minochi. [THE BREEDING ECOLOGY OF *EMBERIZA VARIABILIS.*] *Bull. Inst. Natur. Educ. Shiga Heights* 8: 59-68, illus. 1969. [From Biol. Abstr. 52(23), 1971. In Japanese with English summ.] *WR 144: 129*
[Shinshu Univ., Matsumoto, Japan.]

Haneda, Kenzo, and Hiroshi Watanabe. [THE BREEDING ECOLOGY OF *TURDUS CHRYSOLAUS.*] *Bull. Inst. Natur. Educ. Shiga Heights* 8: 69-77, illus. 1969. [From Biol. Abstr. 52(23), 1971. In Japanese with English summ.] *WR 144: 129*
[Shinshu Univ., Matsumoto, Japan.]

Kalivodova, Eva. POZNAMKY K EKOLOGII TRSTENIARIKA VELKEHO *(ACROCEPHALUS ARUNDINACEUS* L.*).* [NOTES ON THE ECOLOGY OF *ACROCEPHALUS ARUNDINACEUS* L.] *Biologia* (Bratislava) 26(2): 149-152. 1971. [From Biol. Abstr. 52(20), 1971. With English summ.] *WR 144: 129*
[Ustav Biol. Krajiny, Slovenskej Akad. Vied., Bratislava, Czechoslovakia.]

Kanuscak, Pavel. HNIEZDENIE TESARA ČIERNEHO *(DRYOCOPUS MARTIUS* L.*)* NA DOLNOM POVAŽÍ. [NESTING OF THE BLACK WOODPECKER *(DRYOCOPUS MARTIUS* L.*)* IN THE LOWER VAH VALLEY.] *Biologia* (Bratislava) 26(2): 157-159, illus. 1971. [From Biol. Abstr. 52(19), 1971. In Czech with English summ.] *WR 144: 129*
[Prednadrazie 3200/B, Piestany, Czechoslovakia.]

Karpenko, A. V. [*LOXIA CURVIROSTRA* L. IN THE POLTAVA REGION.] *Vestn. Zool.* 5(1): 88-89. 1971. [From Biol. Abstr. 52(19), 1971. In Russian with English summ.] *WR 144: 129*

Lukasiewicz, Karol. KIWI. [THE KIWI.] *Wszechswiat* 9. p. 240-241, illus. 1970. [From Biol. Abstr. 52(19), 1971. In Polish.] *WR 144: 130*
[Polish Copernicus Soc. Natur., Warsaw, Poland.] The characteristics of *Apteryx mantelli, A. australis,* and *A. oweni* are discussed.

Mackowicz, Roch. BIOLOGY OF THE WOODLARK *LULLULA ARBOREA* (LINNAEUS, 1758) (AVES) IN THE RZEPIN FOREST (WESTERN POLAND). *Acta Zool. Cracov.* 15(2): 61-160, illus. 1970. [From Biol. Abstr. 52(19), 1971. In English with Polish and Russian summ.] *WR 144: 130*
[Heigh Sch. Agr., Olsztyn, Poland.] A description of the nesting, feeding, and migratorial behavior of the woodlark.

McCaskie, Guy. THE AMERICAN REDSTART IN CALIFORNIA. *Calif. Birds* 1(2): 41-46, illus. 1970. [From Biol. Abstr. 52(23), 1971.] *WR 144: 130*
[San Diego Natur. Hist. Mus., San Diego, Calif.] *"Setophaga ruticilla."*

Medway, Lord. STUDIES ON THE BIOLOGY OF THE EDIBLE-NEST SWIFTLETS OF SOUTH-EAST ASIA. *Malayan Nature J.* 22(2): 57-63, illus. 1969. [From Biol. Abstr. 52(20), 1971.] *WR 144: 130*
[Univ. Malaya, Kuala Lumpur, Malaysia.] Investigations of two aspects of swiftlet biology, their production of edible nests regularly harvested by man, and their powers of orientation in darkness by echolocation are summarized.

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[Rostov State Univ., Rostov-on-Don, USSR.]

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[La. State Univ., New Orleans.]

Power, Dennis M. EVOLUTION OF THE HOUSE FINCH ON SANTA CRUZ ISLAND, CALIFORNIA. *Canadian J. Zool.* 49(5): 675-684, illus. 1971. [From Biol. Abstr. 52 (22), 1971.] *WR 144: 130*
[Royal Ontario Mus., Toronto, Ontario, Canada.]

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[Univ. Helsinki, Helsinki, Finland.]

Rappe, A. NOTES SUR LA LOCUSTELLE DE SAVI *(LOCUSTELLA LUSCINIOIDES)* EN BELGIQUE. [NOTES ON SAVI'S WARBLER *(LOCUSTELLA LUSCINIOIDES)* IN BELGIUM.] *Aves* 6(5): 148-155, illus. 1969. [From Biol. Abstr. 52(19), 1971. In French.] *WR 144: 130*
[Av. Constellations 43, 1200-Brussels, Belgium.]

Rothstein, Stephen I. HIGH NEST DENSITY AND NON-RANDOM NEST PLACEMENT IN THE CEDAR WAXWING. *Condor* 73(4): 483-485, 1 fig. Winter 1971. *WR 144: 130*
[Smithsonian Inst., Rt. 4, Box 622, Edgewater, Md.]

Rudebeck, Gustaf. A NEW RACE OF THE SPIKE-HEELED LARK, *CHERSOMANES ALBOFASCIATA,* FROM ANGOLA. *Ornis Scandinavica* 1(1): 45-49. 1970. [From Biol. Abstr. 52(23), 1971.] *WR 144: 130*
[Zool. Inst., Lund, Sweden.]

Samchuk, N. D. [SOME MORPHOLOGICAL CHARACTERISTICS OF *PASSER DOMESTICUS* L. IN THE EXAMPLE OF THE ZAPOROZHIE POPULATION.] *Vestn. Zool.* 5(1): 69-73. 1971. [From Biol. Abstr. 52(19), 1971. In Russian with English summ.] *WR 144: 130*
[Inst. Zool., Acad. Sci. Ukrainian SSR, Kiev, USSR.]

Skead, C. J. THE CAPE PARROT IN THE TRANSKEI AND NATAL. *Ostrich*, suppl. no. 9. p. 165-178. July 1971. *WR 144: 131*
[Kaffrarian Mus., King William's Town, South Africa.] *"Poicephalus robustus."*

Smith, Leonard Mitchel. WINTER ECOLOGY OF WOODPECKERS AND NUTHATCHES IN SOUTHEASTERN SOUTH DAKOTA. *Ph.D. thesis, Univ. S. Dak.* 122 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(5), 1971.] *WR 144: 131*
The white-breasted nuthatch *(Sitta carolinensis)*, downy woodpecker *(Dendrocopos pubescens)*, hairy woodpecker *(Dendrocopos villosus)*, flicker *(Colaptes auratus)*, and the red-bellied woodpecker *(Centurus carolinus)* were studied during two winters (1968-70).

Stiles, F. Gary. TIME, ENERGY, AND TERRITORIALITY OF THE ANNA HUMMINGBIRD *(CALYPTE ANNA)*. *Science* (Washington) 173(3999): 818-821, 2 figs. 27 Aug. 1971. *WR 144: 131*
[Amer. Mus. Natur. Hist., New York, N.Y.] Abstract: The male Anna Hummingbird accommodates seasonal changes in energy demands by varying its allocation of time and energy among different activities; total energy expenditures change relatively little. Augmented territorial defense during the breeding season is made possible by increased feeding efficiency due to the availability at this time of very nectar-rich flowers.

Vardy, Linda E. (Donaldson). COLOR VARIATION IN THE CROWN OF THE WHITE-THROATED SPARROW, *ZONOTRICHIA ALBICOLLIS*. *Condor* 73(4): 401-414, 5 figs. Winter 1971. *WR 144: 131*
[City Univ. New York, New York, N.Y.] The white-throated sparrow exhibits a non-bimodal variation in the coloration of the crown for any given age or sex group. This variation is in turn affected by age, sex, and plumage.--From summ.

Willson, Mary F. SEED SELECTION IN SOME NORTH AMERICAN FINCHES. *Condor* 73 (4): 415-429, 6 figs. Winter 1971. *WR 144: 131*
[Univ. Ill., Champaign.] Seed preferences of eight species of North American finches of different bill sizes were tested in the laboratory on eight types of commercially available seeds.--From summ.

REPTILES & AMPHIBIANS

Andrews, Robin Madeline. FOOD RESOURCE UTILIZATION IN SOME TROPICAL LIZARDS. *Ph.D. thesis, Univ. Kans.* 141 p. 1971. [From Diss. Abstr. Int. B. Sci. Eng. 32(5), 1971.] *WR 144: 131*
The partitioning of food resources by closely related and ecologically similar lizard species was investigated in lowland tropical forest in Costa Rica. The three species studied, *Anolis polylepis, A. capito,* and *Corythophanes cristatus* (Iguanidae), are syntopic in their habitat and forage for their arthropod prey in a similar manner.

Avery, David F., and Wilmer W. Tanner. SPECIATION IN THE FIGIAN AND TONGAN IGUANA *BRACHYLOPHUS* (SAURIA, IGUANIDAE) WITH THE DESCRIPTION OF A NEW SPECIES. *Great Basin Natur.* 30(3): 166-172, illus. 1970. [From Biol. Abstr. 52(20), 1971.] *WR 144: 131*
[Southern Conn. State Coll., New Haven.]

Bagdonas, Charles (Karölis) Richard. DIFFERENTIATION OF WESTERN WOOD FROGS. *Ph.D. thesis, Colo. State Univ.* 118 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(5), 1971.] *WR 144: 131*
"Rana maslini is a synonym for *Rana sylvatica."*

Bider, J. R., and W. Hoek. AN EFFICIENT AND APPARENTLY UNBIASED SAMPLING TECHNIQUE FOR POPULATION STUDIES OF PAINTED TURTLES. *Herpetologica* 27(4): 481-484. Dec. 1971. *WR 144: 131*
[McGill Univ., Macdonald Campus, St. Anne de Bellevue, Quebec, Canada.]

Black, Jeffrey Howard, and Robert M. Storm. NOTES ON THE HERPETOLOGY OF GRANT COUNTY, OREGON. *Great Basin Natur.* 30(1): 9-12. 1970. [From Biol. Abstr. 52(20), 1971.] *WR 144: 132*
[Univ. Okla., Norman.]

Blaney, Richard M. SYSTEMATICS OF THE COMMON KINGSNAKE, *LAMPROPELTIS GETULUS* (LINNAEUS). *Ph.D. thesis, La. State Univ.* 188 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(5), 1971.] *WR 144: 132*

Blaney, Richard M. AN ANNOTATED CHECK LIST AND BIOGEOGRAPHIC ANALYSIS OF THE INSULAR HERPETOFAUNA OF THE APALACHICOLA REGION, FLORIDA. *Herpetologica* 27(4): 406-430, 4 figs. Dec. 1971. *WR 144: 132*
[La. State Univ., Baton Rouge.]

Boehler, Erno, and Paul Mueller. BEMERKUNGEN ZUR VARIABILITAET VON *LIOLAEMUS OCCIPITALIS*. [REMARKS ON THE VARIABILITY OF *LIOLAEMUS OCCIPITALIS*.] *Salamandra* 6(3/4): 130-131, illus. 1970. [From Biol. Abstr. 52(20), 1971. In German with English summ.] *WR 144: 132*
[Univ. Vale do Rio Dos Sinos, São Leopoldo, Brazil.] *L. occipitalis* has a peculiar variation in scale counts.

Bogdanov, O. P. [FEEDING OF *ANCISTRODON HALYS* IN MIDDLE ASIA.] *Zool. Zh.* 49(12): 1851-1856. 1970. [From Biol. Abstr. 52(22), 1971. In Russian with English summ.] *WR 144: 132*

Boice, Robert, and Richard C. Williams. DELAY IN ONSET OF TONIC IMMOBILITY IN *RANA PIPIENS*. *Copeia* 1971(4): 747-748. 1 Dec. 1971. *WR 144: 132*
[Univ. Mo., Columbia.]

Boos, J. O., and V. C. Quesnel. NOTES ON *KENTROPYX STRIATUS* IN TRINIDAD, WEST INDIES. *Herpetologica* 27(4): 477-481, 1 fig. Dec. 1971. *WR 144: 132*
[Amoco Trinidad Oil Co., P.O. Box 714, Port of Spain, Trinidad.] The rediscovery of *Kentropyx striatus* in Trinidad is described.--From abstr.

Brame, Arden H., Jr. A NEW SPECIES OF *BATRACHOSEPS* (SLENDER SALAMANDER) FROM THE DESERT OF SOUTHERN CALIFORNIA. *Los Angeles County Mus. Contrib. Sci.* 200: 1-11, illus. 1970. [From Biol. Abstr. 52(22), 1971.] *WR 144: 132*
[Eaton Canyon Nat. Center, 1750 N. Altadena Dr., Pasadena, Calif.] A new species *(Batrachoseps aridus)* is described from the lower desert slopes of the Santa Rosa Mountains.

Brame, Arden H., Jr., and William E. Duellman. A NEW SALAMANDER (GENUS *OEDIPINA*) OF THE *UNIFORMIS* GROUP FROM WESTERN PANAMA. *Los Angeles County Mus. Contrib. Sci.* 201: 1-8, illus. 1970. [From Biol. Abstr. 52(22), 1971.] *WR 144: 132*
[Eaton Canyon Nat. Center, 1750 N. Altadena Dr., Pasadena, Calif.] A new species *(Oedipina grandis)* from western Panama.

Brown, Lauren E. NATURAL HYBRIDIZATION AND TREND TOWARD EXTINCTION IN SOME RELICT TEXAS TOAD POPULATIONS. *Southwest. Natur.* 16(2): 185-199, 4 figs. 15 Nov. 1971. *WR 144: 132*
[Ill. State Univ., Normal.] Natural hybridization is reported for the Houston toad, *Bufo houstonensis*, with two other species, *B. woodhousei* and *B. valliceps*, in a disjunct pine forest near Bastrop, Bastrop Co., Texas.--From abstr.

Burghardt, Gordon M. CHEMICAL-CUE PREFERENCES OF NEWBORN SNAKES: INFLUENCE OF PRENATAL MATERNAL EXPERIENCE. *Science* (Washington) 171(3974): 921-923, 2 figs. 5 Mar. 1971. *WR 144: 132*
[Univ. Tenn., Knoxville.] Abstract: Newborn garter snakes *(Thamnophis sirtalis)* responded similarly to worm and fish surface extracts regardless of whether the mothers were fed exclusively on fish or worms during the gestation

period. Worm extract was the more effective. This result is in contrast with the easy modifiability of chemical-cue preferences in young snakes after birth. The initial stimulus control of the attack response in newborn snakes thus seems relatively unmodifiable.

Buschinger, Alfred, Ulrich F. Gruber, Ulrich Mitze, and Bernhard Verbeek. VORLAEUFIGE UNTERSUCHUNGEN UEBER AKTIVITAET UND WANDERVERHALTEN JUNGER ERDKROETEN *(BUFO BUFO)*. [PRELIMINARY STUDIES ON THE ACTIVITY AND MIGRATORY BEHAVIOUR OF THE YOUNG COMMON TOAD *(BUFO BUFO)*.] *Salamandra* 6(3/4): 115-119, illus. 1970. [From Biol. Abstr. 52(20), 1971. In German with English summ.] *WR 144: 133*
[Univ. Bonn, Bonn-Endenich, Germany.]

Bustard, H. Robert. A POPULATION STUDY OF THE EYED GECKO, *OEDURA OCELLATA* BOULENGER, IN NORTHERN NEW SOUTH WALES, AUSTRALIA. *Copeia* 1971(4): 658-669, 6 figs. 1 Dec. 1971. *WR 144: 133*
[Australian Nat. Univ., Canberra, Australia.]

Calderwood, Hugh W. ANESTHESIA FOR REPTILES. *J. Amer. Vet. Med. Ass.* 159 (11): 1618-1625, 5 figs. 1 Dec. 1971. *WR 144: 133*
[Univ. Fla., Gainesville.]

Calef, George Waller. AN ANALYSIS OF MORTALITY IN A POPULATION OF TADPOLES OF THE RED-LEGGED FROG *(RANA AURORA)*. *Ph.D. thesis, Univ. British Columbia.* 1971. To obtain a microfilm copy please order directly from the National Library of Canada at Ottawa. [From Diss. Abstr. Int. B. Sci. Eng. 32(5), 1971.] *WR 144: 133*
The survivorship, distribution, growth rates, and natural predation rates on the population of *Rana aurora* tadpoles in Marion Lake, British Columbia, were studied during the summers of 1969 and 1970. Natural survivorship appeared to have two phases: a rapid decline in numbers during the first four weeks after hatching was followed by a less rapid decline, until approximately 5% of the population remained at metamorphosis, after 11-14 weeks.

Campbell, James B., and William G. Degenhardt. *BUFO BOREAS BOREAS* IN NEW MEXICO. *Southwest. Natur.* 16(2): 219. 15 Nov. 1971. *WR 144: 133*
[Mountain Res. Sta., Nederland, Colo.]

Clark, Donald R., Jr. ECOLOGICAL STUDY OF THE WORM SNAKE *CARPHOPHIS VERMIS* (KENNICOTT). *Univ. Kans. Publ. Mus. Natur. Hist.* 19(2): 85-194, illus. 1970. [From Biol. Abstr. 52(22), 1971.] *WR 144: 133*
[Univ. Kans., Lawrence.]

Cohen, Nicholas. REPTILES AS MODELS FOR THE STUDY OF IMMUNITY AND ITS PHYLOGENESIS. *J. Amer. Vet. Med. Ass.* 159(11): 1662-1671, 1 fig. 1 Dec. 1971. *WR 144: 133*
[Univ. Rochester, Rochester, N.Y.]

Cooper, William E., Jr. DISPLAY BEHAVIOR OF HATCHLING *ANOLIS CAROLINENSIS*. *Herpetologica* 27(4): 498-500. Dec. 1971. *WR 144: 133*
[Kans. State Univ., Manhattan.]

Cosgrove, G. E. REPTILIAN RADIOBIOLOGY. *J. Amer. Vet. Med. Ass.* 159(11): 1678-1684, 7 figs. 1 Dec. 1971. *WR 144: 133*
[Oak Ridge Nat. Lab., Oak Ridge, Tenn.]

Coulson, Roland A., and Thomas Hernandez. REPTILES AS RESEARCH MODELS FOR COMPARATIVE BIOCHEMISTRY AND ENDOCRINOLOGY. *J. Amer. Vet. Med. Ass.* 159(11): 1672-1677, 6 figs. 1 Dec. 1971. *WR 144: 133*
[La. State Univ. Med. Center, New Orleans.]

Dawson, William R. REPTILES AS RESEARCH MODELS IN COMPARATIVE PHYSIOLOGY. *J. Amer. Vet. Med. Ass.* 159(11): 1653-1661. 1 Dec. 1971. *WR 144: 134*
[Univ. Mich., Ann Arbor.]

De Espinoza, Nelly Carrillo. CONTRIBUCIÓN AL CONOCIMIENTO DE LOS REPTILES DE PERU. (SQUAMATA, CROCODYLIA, TESTUDINATA: REPTILIA). [CONTRIBUTION TO THE KNOWLEDGE OF THE REPTILES OF PERU. (SQUAMATA, CROCODILIA, TESTUDINATA: REPTILIA).] *Publ. Mus. Hist. Natur. Javier Prado Ser. A Zool.* 22: 1-64, illus. 1970. [From Biol. Abstr. 52(22), 1971. In Spanish with English summ.] *WR 144: 134*
[Mus. Hist. Natur. "Javier Prado", Univ. Nac. Mayor de San Marcos, Lima, Peru.]

De Hanel, F. A., and Helen M. McInnes. LIZARDS AS VECTORS OF HUMAN SALMONELLOSIS. *J. Hyg.* 69(2): 247-253. 1971. [From Biol. Abstr. 52(21), 1971.] *WR 144: 134*
[Univ. Otago, Dunedin, New Zealand.] Human infections with *Salmonella saintpaul* were more frequent in New Zealand in recent years. Most cases now occur in Otago. Wild lizards in Otago, particularly the common skink *(Leiolopisma zelandica)*, carry *S. saintpaul* and most if not all human outbreaks of this *Salmonella* serotype are associated with either lizards or lizard infested areas. This is the first report incriminating lizards as the probable cause of human salmonellosis.

De Lema, Thales. SÔBRE O STATUS DE *ELAPOMORPHUS BILINEATUS* DUMÉRIL, BIBRON AND DUMÉRIL, 1854, CURIOSA SERPENTE SUBTERRÂNEA. [ON THE STATUS OF *ELAPOMORPHUS BILINEATUS* DUMÉRIL, BIBRON AND DUMÉRIL, 1854, PECULIAR SUBTERRANEAN SERPENT (REVIEW).] *Iheringia Zool.* 38: 89-118, illus. 1970. [From Biol. Abstr. 52 (20), 1971. In Portuguese with English summ.] *WR 144: 134*
["Inst. Cienc. Exatas Nat.," Pontif. Univ. Catol., Rio Grande Sul, Porto Alegre, Brazil.]

Diefenbach, Carlos O., and Scott G. Emslie. CUES INFLUENCING THE DIRECTION OF PREY INGESTION OF THE JAPANESE SNAKE, *ELAPHE CLIMACOPHORA* (COLUBRIDAE, SERPENTES). *Herpetologica* 27(4): 461-466, 2 figs. Dec. 1971. *WR 144: 134*
[State Univ. N.Y., Buffalo.]

Dmi'el, R., and B. Zilber. WATER BALANCE IN A DESERT SNAKE. *Copeia* 1971 (4): 754-755. 1 Dec. 1971. *WR 144: 134*
[Tel-Aviv Univ., Tel-Aviv, Israel.] *"Spalerosophis cliffordi."*

Dobie, James L. REPRODUCTION AND GROWTH IN THE ALLIGATOR SNAPPING TURTLE, *MACROCLEMYS TEMMINCKI* (TROOST). *Copeia* 1971(4): 645-658, 12 figs. 1 Dec. 1971. *WR 144: 134*
[Auburn Univ., Auburn, Ala.]

Dodson, Stanley I., and Virginia E. Dodson. THE DIET OF *AMBYSTOMA TIGRINUM* LARVAE FROM WESTERN COLORADO. *Copeia* 1971(4): 614-624, 1 fig. 1 Dec. 1971. *WR 144: 134*
[Univ. Wis., Madison.] *A. tigrinum* larvae from two ponds in the Elk Mountains of western Colorado were found to eat a wide variety of foods, including a total of 42 classes, mostly of various littoral, benthic, and planktonic arthropods. Most common animals (between 0.5 and 20 mm in length) in these ponds were eaten in proportion to their abundance.--From summ.

Dolbeer, Richard A. WINTER BEHAVIOR OF THE EASTERN BOX TURTLE, *TERRAPENE C. CAROLINA* L., IN EASTERN TENNESSEE. *Copeia* 1971(4): 758-760, 1 fig. 1 Dec. 1971. *WR 144: 134*
[Colo. Coop. Wildl. Res. Unit, Fort Collins.]

Dolensek, Emil P. NECROPSY TECHNIQUES IN REPTILES. *J. Amer. Vet. Med. Ass.* 159(11): 1616-1617. 1 Dec. 1971. *WR 144: 135*
[N.Y. Zool. Soc., Bronx Park, Bronx.]

Dollahon, Norman R., and John Janovy, Jr. INSECT FLAGELLATES FROM FECES AND GUT CONTENTS OF FOUR GENERA OF LIZARDS. *J. Parasitol.* 57(5): 1130-1132. Oct. 1971. *WR 144: 135*
[Univ. Nebr., Lincoln.]

Downes, M. C. A BIBLIOGRAPHY OF THE RECENT CROCODILIANS. *Dep. Agr., Stock & Fisheries, Territory Papua & New Guinea.* 256 p. + 37 p. 1970. [Working draft only.] *WR 144: 135*
[Wildl. Lab., Dep. Agr. Stock & Fisheries, Konedobu, Territory of Papua & New Guinea.] A prelininary working list of more than 2,200 titles compiled from available literature. Many titles have not been checked and the bibliography is incomplete.

Echternacht, Arthur C. MIDDLE AMERICAN LIZARDS OF THE GENUS *AMEIVA* (TEIIDAE) WITH EMPHASIS ON GEOGRAPHIC VARIATION. *Univ. Kans. Misc. Publ.* no. 55. 86 p., 26 figs. Dec. 1971. *WR 144: 135*
[Boston Univ., Boston, Mass.]

Ernst, Carl H., and Evelyn M. Ernst. THE TAXONOMIC STATUS AND ZOOGEOGRAPHY OF THE PAINTED TURTLE, *CHRYSEMYS PICTA*, IN PENNSYLVANIA. *Herpetologica* 27(4): 390-396, 1 fig. Dec. 1971. *WR 144: 135*
[Southwest Minn. State Coll., Marshall.]

Feuer, Robert C. INTERGRADATION OF THE SNAPPING TURTLES *CHELYDRA SERPENTINA SERPENTINA* (LINNAEUS, 1758) AND *CHELYDRA SERPENTINA OSCEOLA* STEJNEGER, 1918. *Herpetologica* 27(4): 379-384, 1 fig. Dec. 1971. *WR 144: 135*
[Philadelphia Coll. Pharmacy & Sci., Philadelphia, Pa.] Abstract: The Florida snapping turtle, *Chelydra serpentina osceola*, is shown to intergrade with the common snapping turtle, *Chelydra s. serpentina*, in the Okefenokee Swamp in southern Georgia and northeastern Florida. Historical zoogeography of *Chelydra serpentina osceola* is discussed.

Freytag, Guenther E. ZUM NACHWEIS VON FREILANDBASTARDEN ZWISCHEN *TRITURUS VULGARIS* UND *TRITURUS HELVETICUS*. [ON THE DETERMINATION OF NATURALLY OCCURRING HYBRIDS BETWEEN *TRITURUS VULGARIS* AND *TRITURUS HELVETICUS*.] *Salamandra* 6(3/4): 136-138. 1970. [From Biol. Abstr. 52(20), 1971. In German with English summ.] *WR 144: 135*
[Invalidenstr. 101, Berlin, Germany.]

Frost, John S., and Elden W. Martin. A COMPARISON OF DISTRIBUTION AND HIGH TEMPERATURE TOLERANCE IN *BUFO AMERICANUS* AND *BUFO WOODHOUSII FOWLERI*. *Copeia* 1971(4): 750-751. 1 Dec. 1971. *WR 144: 135*
[Bowling Green State Univ., Bowling Green, Ohio.]

Gallardo, José M. LA DISTRIBUCIÓN DE LAS SUBESPECIES DE *BUFO GRANULOSUS* SPIX: SU FIDELIDAD A LOS SISTEMAS HIDROGRÁFICOS SUDAMERICANOS. [THE DISTRIBUTION OF THE SUBSPECIES OF *BUFO GRANULOSUS* SPIX: ITS FIDELITY TO THE SOUTH AMERICAN DRAINAGE SYSTEMS.] *Cienc. Invest.* 25(9): 406-416, illus. 1969. [From Biol. Abstr. 52(20), 1971. In Spanish.] *WR 144: 135*
[Mus. Argent. Cienc. Natur., Buenos Aires, Argentina.]

Gallardo, José M. SAURIOS ARGENTINOS. II. LOS LAGARTOS PATAGÓNICOS. [ARGENTINE SAURIANS. II. THE PATAGONIAN LIZARDS.] *Cienc. Invest.* 26(9): 396-403, illus. 1970. [From Biol. Abstr. 52(20), 1971. In Spanish.] *WR 144: 135*
[Mus. Argent. Cienc. Natur., Buenos Aires, Argentina.]

Gehlbach, Frederick R., Julian F. Watkins II, and James C. Kroll. PHEROMONE TRAIL-FOLLOWING STUDIES OF TYPHLOPID, LEPTOTYPHLOPID, AND COLUBRID SNAKES. *Behaviour* 40(3-4): 282-294, 1 fig. 1971. In English with German summ. *WR 144: 136*
[Tex. A&M Univ., College Station.]

Gelder, J. J. van, and H. C. M. Hoedemaekers. SOUND ACTIVITY AND MIGRATION DURING THE BREEDING PERIOD OF *RANA TEMPORARIA* L., *R. ARVALIS* NILSSON, *PELOBATES FUSCUS* LAUR. AND *RANA ESCULENTA* L. *J. Anim. Ecol.* 40(3): 559-568, 3 figs. Oct. 1971. *WR 144: 136*
[Catholic Univ., Nijmegen, Netherlands.]

Graham, Richard Earl Francis. ENVIRONMENTAL EFFECTS ON DEME STRUCTURE, DYNAMICS AND BREEDING STRATEGY OF *AMBYSTOMA OPACUM* (AMPHIBIA: AMBYSTOMATIDAE), WITH AN HYPOTHESIS ON THE PROBABLE ORIGIN OF THE MARBLED SALAMANDER LIFE-STYLE. *Ph.D. thesis, Rutgers Univ.* 157 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(6), 1971.] *WR 144: 136*

Gray, Robert H. FALL ACTIVITY AND OVERWINTERING OF THE CRICKET FROG *(ACRIS CREPITANS)* IN CENTRAL ILLINOIS. *Copeia* 1971(4): 748-750. 1 Dec. 1971. *WR 144: 136*
[Lake Erie Coll., Painesville, Ohio.]

Heatwole, Harold, Elizabeth Cameron, and Grahame J. W. Webb. STUDIES ON ANURAN WATER BALANCE--II. DESICCATION IN THE AUSTRALIAN FROG, *NOTADEN BENNETTI*. *Herpetologica* 27(4): 365-378, 2 figs. Dec. 1971. *WR 144: 136*
[Univ. New England, Armidale, N.S.W., Australia.] Abstract: Rate of evaporative loss in *Notaden bennetti* is dependent upon amount of activity. Neither standard rate of loss nor vital limit show any adaptive differences in comparison to other species. However, *N. bennetti* is behaviorally adapted to dry habitats by (1) selecting high humidities, (2) reducing activity during desiccation, (3) aggregating when moisture conditions are unfavorable, (4) burrowing (emerging only when surface moisture is abundant), and (5) not burrowing in extremely dry soils. The extent of desiccation influences the frequency of burrowing and aggregation. These responses are not modified by lighting conditions and do not seem to be greatly influenced by an internal activity rhythm.

Heusser, Hans. ANSIEDLUNG, ORTSTREUE UND POPULATIONSDYNAMIK DES GRASFROSCHES *(RANA TEMPORARIA)* AN EINEM GARTENWEIHER. [SETTLING, OCCURRENCE AT THE SAME PLACE EVERY YEAR AND POPULATION DYNAMICS OF THE COMMON FROG *(RANA TEMPORARIA)* AT A GARDEN POND.] *Salamandra* 6(3/4): 80-87, illus. 1970. [From Biol. Abstr. 52 (20), 1971. In German with English summ.] *WR 144: 136*
[CH-8127 Forch-Zurich, Switzerland.]

Heyer, W. Ronald. STUDIES ON THE FROGS OF THE GENUS *LEPTODACTYLUS* (AMPHIBIA: LEPTODACTYLIDAE): VI. BIOSYSTEMATICS OF THE *MELANONOTUS* GROUP. *Los Angeles County Mus. Contrib. Sci.* 191. p. 1-47, illus. 1970. [From Biol. Abstr. 52 (21), 1971.] *WR 144: 136*
[Pac. Lutheran Univ., Tacoma, Wash.]

Hinderstein, Barry. STUDIES ON THE SALAMANDER GENUS *DESMOGNATHUS:* VARIATION OF LACTATE DEHYDROGENASE. *Copeia* 1971(4): 636-644, 3 figs. 1 Dec. 1971. *WR 144: 136*
[Sam Houston State Coll., Huntsville, Tex.]

Holliman, Rhodes B., J. Elwood Fisher, and James C. Parker. STUDIES ON *SPIRORCHIS PARVUS* (STUNKARD, 1923) AND ITS PATHOLOGICAL EFFECTS ON *CHRYSEMYS PICTA PICTA*. *J. Parasitol.* 57(1): 71-77, 6 figs. Feb. 1971. *WR 144: 136*
[Va. Polytech. Inst., Blacksburg.] *Spirorchis parvus* was found in the turtle, *Chrysemys picta picta* from Sinking Creek, Giles County, Va., and its life cycle established in the laboratory. Exposure of parasite-free turtles to this cercaria in the laboratory produced mature worms in 91 days. The worms were found

in the brain, spinal cord, gut, spleen, lungs, and heart. They were found inside arterioles, also free in tissues, but not in veins. Severe neurological signs were noted in 3 experimental turtles.--From abstr.

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[Zool. Garten, Zürich, Switzerland.] *"B. constrictor imperator."*

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As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral, land, park, and recreational resources. Indian and Territorial affairs are other major concerns of this department of natural resources.

The Department works to assure the wisest choice in managing all our resources so that each shall make its full contribution to a better United States now and in the future.